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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Potash Bibliography

THE publication of Bulletin 327, "Potash Bibliography to 1928 (annotated)," is announced by the United States Bureau of Mines. The Bulletin, which is by J. F. T. Berliner, is a review and compilation of technical literature on potash salts, including the alunites, and their foreign occurrences. The review is confined to the technical literature of the origin, history, and foreign occurrences of saline potassium minerals, their mining, description, treatment, and physical-chemical relations. The literature on alunite, jarosite, and related minerals has also been included. An attempt has been made to survey all the published technical data on potash minerals, the nature of their occurrences, conditions for their formation, theories of their origin, and their chemical and physical properties. The mining and treatment of potash salts, the equipment and operational factors involved, and related subjects are considered.

The material in the review is arranged chronologically and alphabetically according to authors within each year. An author index and a detailed subject index are appended. An index of the numerous potash and associated minerals with their synonyms and empirical compositions is also included. In the preparation of the bulletin the files of approximately 650 different journals have been consulted. The bibliography includes references to authors of ancient dates such as Pliny the Elder and Agricola. Nearly 4,000 separate references are cited and there is a brief historical sketch of foreign potash occurrences. An index of potash-bearing minerals is also included. Copies of the Bulletin 327 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., at a price of 90 cents.

The United States Bureau of Mines also announces Bulletin 328, "Greensand Bibliography to 1930 (annotated,)" by R. Norris Shreve, published in connection with the Bureau's general study of domestic potash-bearing minerals.

A Victory for Gas Interests

THE London County Council has wisely adopted the recommendation of its Housing Committee that tenants of municipal houses should be allowed freedom to use gas in their homes. For some time the Council had prohibited the use of gas for any purpose on some of its estates, and leaders of the gas industry have made vigorous public protests against what they properly describe as unfair restrictions on a progressive industry. The Housing Committee's recommendation was that the London County Council tenants should be allowed to choose whether they would have in their homes gas or electricity, or both, provided no additional charges on the rates were involved. It was stated that two gas companies had offered to lay all mains and to pipe all dwellings in their areas free of charge on condition that the occupants of the houses were allowed free choice in the matter of their heating and lighting supplies. The Committee suggested that the electricity undertakings should make similar offers. In tracing the history of the question, the Committee referred to a motion put before the L.C.C. eight years ago by Mr. Herbert Morrison, now Minister of Transport, in which he suggested that gas could be dispensed with in favour of electricity in the running of a house.

Scientific Disarmament

MAJOR VICTOR LEFEBURE'S new book, "Scientific Disarmament" is a different and a far more weighty production than his "Riddle of the Rhine." From the point of view of popular appeal, indeed, the mass of knowledge that it embraces and the high seriousness of the argument throughout may be some handicap. The book is not light reading; it is not intended for the casual or light-hearted reader. It is pre-eminently a serious work, written by a distinguished and sincere scientist, who saw much of what was known as chemical warfare in the last war, and desires very earnestly to see some plan adopted for preventing another such

catastrophe. But by those who are sufficiently equipped to welcome a thorough and learned examination of the question of scientific disarmament, the book will be regarded as the most exhaustive effort in this particular field. Its main value is that it sets out the facts with which all students of disarmament must deal, and Major Lefebure sets them out with great fullness and clearness, in the light of his ample chemical knowledge and experience. A number of distinguished persons, among whom we notice Professor Donnan and Dr. Herbert Levinstein, have written short forewords expressing their sense of the value of the author's effort. Professor Donnan says truly that this "very noteworthy and valuable book" could "only have been written in virtue of that unusual combination of scientific equipment and armament knowledge and experience which he possesses." Dr. Levinstein's comment is that "Major Lefebure has rendered a great service by his statement and definition of the problem, by examining in detail many of the difficulties, and by giving a clear and acceptable outline of the method to be followed."

American Chemical Conditions

DURING the present depression, as during the war and immediate post-war periods, observers have been struck by the similarity between the conditions in this country and the United States. Allowing for differences in scale and population, there would seem to be no essential difference in the experiences of British and American chemical firms. We have just received an interesting communication from a valued correspondent exceptionally well placed to know what is really happening. "I hope very much," he writes, "that business conditions are improving in England. They seem to have about reached their lowest ebb with us, but a real improvement is not yet to be definitely noted. I believe there is more optimism apparent and I have no doubt that a slow uphill progress is already under way. I fear it will be some time, however, before its beneficial effects will be generally noted."

Political Economy

THE business man does right to be suspicious of the newly discovered zeal among politicians for national economy. The Chancellor of the Exchequer has now uttered three warnings, first to the House of Commons, next to the Labour Members of Parliament, and thirdly to his own constituents, on the financial position and the certain deficit with which he will be faced if he is called upon to introduce another Budget. The plain man who reads between the lines of these various utterances may be forgiven an uneasy feeling that he is being prepared for an increase of taxation rather than a reduction of expenditure. The only economy campaign which will enable the business community to get on with its job of finding new markets and affording more employment is one which not only limits expenditure but limits it so effectively as to make a reduction of taxation possible. The Chancellor of the Exchequer said truly that the placing of any further burdens upon industry would be the last straw, but no economist has yet found a way to raise new taxation without affecting industry. It is idle to tax a man as a citizen and then to tell him that his industrial possibilities will be unimpaired. The blunt truth is that the taxable population under the present system is in the main the employing class, whether directly or by investment. More taxation accordingly means less money for maintaining, let alone expanding, industry. The only comfort to be obtained from the present position is that the cause of economy is for the moment the chief subject of public discussion. It is for its friends, and more particularly for those engaged in industry and commerce, to ensure that it is not allowed to sink back until the true remedy has been found.

Books Received

REPORT ON THE SCIENTIFIC AND PROFESSIONAL STAFFS IN THE PUBLIC SERVICES AND INDUSTRY. London: The British Science Guild. Pp. 62. 1s.

GASANALYSE IN DER TECHNIK. By Dr. P. Schuftan. Leipzig: S. Hirgel. Pp. 80. R.M. 5·50.

ELEMENTS OF CHEMICAL ENGINEERING. By W. L. Badger and Warren L. McCabe. London: McGraw-Hill Publishing Co., Ltd. Pp. 625. 25s.

A MONOGRAPH OF VISCOMETRY. By Guy Barr. London: Humphrey Milford. Pp. 318. 30s.

The Calendar

Mar.		
2	University of Birmingham Chemical Society: "Progress in Petroleum Chemistry." Dr. A. R. Bowen. 5.30 p.m.	University, Birmingham.
2	Society of Dyers and Colourists (West Riding Section): Luncheon Address: "The Gold Standard and Industries Relation." Professor J. H. Richardson.	Bradford.
2	Society of Chemical Industry (London Section): "The Chemotherapy of Antimony." W. H. Gray, J. W. Trevan, and Miss H. W. Bainbridge. 8 p.m.	Burlington House, Piccadilly, London.
3	Institute of Chemistry (Birmingham and Midlands Section): "Proprietary Medicines." H. H. Bagnall. 7.30 p.m.	University, Birmingham.
4	Royal Society of Arts: "Safety in Factories." Sir Gerald Bellhouse. 8 p.m.	John Street, Adelphi, London.
4	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
5	Chemical Society: Papers by F. L. Gilbert, R. R. Goldstein and T. M. Lowry; R. V. Henley and E. E. Turner. 8 p.m.	Burlington House, Piccadilly, London.
5	Society of Chemical Industry (Bristol Section): Annual Meeting. 7.30 p.m.	University, Bristol.
5&6	Institution of Chemical Engineers. Annual Corporate Meeting.	London.
6	Society of Dyers and Colourists (Manchester Section). Joint Meeting with the Liverpool and Manchester Sections of the Society of Chemical Industry. "The Action of Caustic Soda on Cellulose." S. M. Neale. 7 p.m.	17, Albert Square, Manchester.
6	Society of Chemical Industry (Glasgow Section): Annual Business Meeting. 6.30 p.m.	Grosvenor Restaurant, Glasgow.
6	Physical Society. 5 p.m.	Imperial College of Science, South Kensington, London.
9	Institute of Metals (Scottish Section): Annual General Meeting. Open Discussion. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
10	Institute of Metals (N.E Coast Section): "The Extraction of Copper." R. D. Burn. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
10	Institute of Metals (Swansea Section): "Some Researches on the Wire-drawing Process." Professor F. C. Thompson. 6.15 p.m.	Y.M.C.A., Swansea.

Trade Conditions in the United States

(From Our Special Correspondent)

New York, February 14.

BREAKING the journey here on the way to South America has enabled me to discuss the situation with business authorities. In view of the serious decline in the United States exports to Argentina, referred to in THE CHEMICAL AGE last week, I gather that the British Exhibition is viewed with some apprehension. It is realized that the comparative strength of our position there will be further improved and that the tour now being made by the Prince of Wales is the best possible preparation for this great national enterprise. In commenting on the Royal tour, the American newspapers are especially impressed by the Prince's detailed interest in the industrial aspects of the localities he is visiting. At one time special American activities were contemplated, and it is an open secret here that Colonel Lindbergh was asked to make a flight through the Latin Republics this year as a means of showing the flag. With customary tact he declined, but so popular was his previous tour that he may repeat the experiment before very long.

Impressions of New York

My first impression of New York, after eight years' absence, is the widespread evidence of unemployment. Apple-selling is the symbol of the workless here. Scores of men stand at the street corners offering ripe red apples at five cents, and some of them, I am told, earn as much as two dollars a day. The city authorities are overlooking the law against unlicensed street trading, and there are even apple baskets in Fifth Avenue, on the steps of buildings which have the highest rents in the world.

Up to the present, no Government provision has been made to meet the situation, but the city authorities are extremely active. Mayor Walker has posted notices urging citizens "to provide temporary jobs in store or home." On a typical church I observed a board announcing that an "Employment Adjustment Agency" is open every evening to help the workless. Charity is also helping on the generous scale which characterised American relief work during the war. Mrs. William Randolph Hearst, wife of the newspaper proprietor, is chairman of a committee to assist the children. In a Fifth Avenue church I heard the congregation upbraided from the pulpit for having raised only $5,000 towards relief. "If the parish were united on this object," said the parson, "We ought to raise between $25,000 and $50,000."

Estimates of unemployment in the United States now range from four to six million, and the balance of probability is with the higher number. This situation is aggravated by the distress of the farmers who, it should be remembered, form a far larger part of the community than in England. This distress is due to a bumper harvest accompanied by a fall of corn and wheat prices to sensationally low levels and a serious drought in the Middle West. Subsistence crops as well as crops for sale have suffered alike. In twenty-five of the forty-eight States and especially in the lower Mississippi Valley, there is very serious want. The Red Cross is organising assistance as well as it can, and in the opinion of the President, it is doing so adequately. Mr. Hoover has therefore rejected the proposal of the Senate for an officially administered relief fund of $25,000,000, and there has been in consequence a deadlock in the legislative programme of Congress. It is said that a compromise has now been reached, and that a large sum will be spent on relief through other than the Red Cross organisation, on a basis of drought relief and not as a matter of State charity. There is no doubt that relief is urgently needed.

American Foreign Trade

Reports for the year 1930 show a decrease in American foreign trade of about 20 per cent., which is closely comparable to and possibly worse than the decrease in England and Germany. Such figures as are available do not permit of absolutely accurate comparison since they are based on different methods of estimation. There is no doubt that trade with South America has fallen off greatly, this being partly due to a fall in the general price level, and this, in turn, is due to the general inadequacy or misapplication of world gold stocks. There has been over-production or over-stocking of commodities in this trade, such as coffee, sugar, copper, silver and oil.

Prices on the stock exchange, which had declined steadily since November, 1929, and are now at about 1926 levels, rose suddenly two days ago and the rise is attributed in large part to the favourable report of the U.S. Steel Corporation. Whether the rise is likely to be lasting no one at present can say.

In spite of trade depression, there is no lack of progress in building here. The skyline of New York has greatly altered since I first saw it in 1922. The famous Woolworth building has fallen into comparative obscurity and the Chrysler skyscraper, with its huge gilded spire, is now being capped by the Empire State Building—it is over 1,000 ft. high, and will have eighty-four storeys when completed. On the River Hudson a new bridge is being built, which it is expected will be opened in 1932. New apartment houses are being erected in the Central Park area, and building enterprise seems little discouraged by the present depression in industry.

John A. Benn

"Industria Britannica"

THE Executive Committee of the Federation of British Industries have given full approval to the arrangements already made for *Industria Britannica*, the new trade journal which is being planned by Benn Brothers, Ltd., in conjunction with a group of well-known authorities on South American trade. The success of the British Empire Trade Exhibition at Buenos Aires seems already assured. The Prince of Wales is obviously going to give it a wonderful start, and the British star will be definitely in the ascendant in Latin-America for a long time to come. The trail for British exports having been blazed by the Royal Ambassador, a great effort will then be needed to consolidate one of the finest markets in the world. British traders, and more particularly those who have had the enterprise to show their products at the Buenos Aires Exhibition, will put their best foot foremost. But there is general agreement among them that their work can only have lasting effect if it is supported by a strong journal commending British goods to Spanish-speaking buyers in South America through the medium of their own language. The new journal, *Industria Britannica*, will supply this want, and the great interest of British manufacturers in the venture is shown by an increasing number of inquiries couched in enthusiastic terms.

A Comprehensive Exhibit

AN example of carefully planned endeavour to make the best use of the trade possibilities provided in the Buenos Aires Exhibition is shown by Rhodes, Brydon and Youatt, Ltd., of Waterloo Engineering Works, Stockport. The leading product of this firm is a range of electric pumping units patented under the trade name "Mopump," and ranging from a ½ in. pump, suitable for car washing or tank filling, to a 6 in. "Full Way" unit for circulating hot water to heat a large modern building. Rhodes, Brydon and Youatt, through their representative in the Argentine—Mr. A. Henderson Davies—have secured space in the engineering section for a comprehensive exhibit, including a pump at work with a large weir tank for demonstrations. Mr. Davies will have for distribution a good supply of descriptive literature printed in Spanish.

International Aluminium Competition

SOME time ago the promotion was announced of an international aluminium competition with prizes totalling £800 and having as its object the stimulation of research into new uses and applications of aluminium in the arts and industries. The final date for the sending in of particulars of inventions, etc., on the part of competitors is April 1, 1931. Particulars should be sent before that date to Bureau International de l'Aluminium, 23 bis Rue de Balzac, Paris 8, from whom all information regarding the competition can be obtained.

Looking Back on the Fair

Chemical Exhibitors Satisfied

EXHIBITORS generally at the British Industries Fair, 1931, have reason to be satisfied with their participation and have done more business than was expected at a time of trade depression. The attendances both at Castle Bromwich and the London sections during the first week constituted actual records, and the high figures have been maintained during the present week. In certain sections it has been noted that there has been an unusually high proportion of inquiries to orders. In the chemical section, however, it is natural to expect a large number of inquiries, and this year many exhibitors report that they have been of a stimulating character. They have revealed unsuspected needs that can easily be satisfied and new uses and lines of development for established products.

Overseas buyers have been plentiful and have been observed making their rounds of the stands with singular thoroughness. Over 70 countries have been represented in this way, the largest numbers of buyers coming from Holland, Denmark, the Irish Free State, Germany, Canada, the United States, France, Australia and Belgium. Numerous visitors from South America have arrived, despite the forthcoming Empire Exhibition at Buenos Aires. The Argentine Military Purchasing Mission paid a special visit to Birmingham to view the machinery section and expressed themselves as greatly impressed with the quality of the exhibits. Organised parties of business men have also come from Yugoslavia, Russia and Germany.

More Attractive Chemical Stands

In a review of the Fair from the chemical standpoint, Mr. J. Davidson Pratt, General Manager of the Association of British Chemical Manufacturers, states that the general attractiveness of the stands in the chemical section was a great improvement on what has been achieved in previous years. There is still a tendency, however, for certain firms to attempt to "put all their goods in the shop window" and, by a huddled display, dissipate interest. Chemical manufacturers, on the whole, have good cause to be pleased with the Fair, although orders have been somewhat unevenly distributed. Some firms have booked extremely heavy business, while others report that inquiries have not been much more than average. Olympia continues to demonstrate its advantages over the White City as a site for the Fair, and the chemical section has established itself very comfortably there. Chemical plant manufacturers, such as the Kestner Evaporator and Engineering Co. and the Aluminium Plant and Vessel Co., both of whom had stands at the last Fair, were absent this time, but this is in view of the plant manufacturers' own exhibition, which is being held in London later in the year. Mr. Pratt also alluded to the great significance of Industrial Solvents' exhibit of ethyl alcohol, acetic acid, acetone, butyl alcohol, etc., and the important work accomplished and the promise for future developments which it represents.

I.C.I. and the Fair

Commander H. S. H. Ellis reports that, as usual, the I.C.I. stands have evoked a large amount of attention. At the Birmingham Section the Cassel-Cyanide exhibit has been well patronised by interested inquirers, and so also has the Nobel Chemical Finishes stand.

The dyestuffs exhibit at the Artificial Silk Exhibition at the Albert Hall created a very great deal of public interest, both at the Exhibition and throughout the Press, particularly the Caledon Jade Green dye, and drew a number of inquiries for the vast range of dyestuffs both of the Caledon and Duranol types.

On the main I.C.I. stand at Olympia surprise has been occasioned by the large number of visitors to the cinematograph hall, which has been kept busy all day long showing films relating to different activities of I.C.I. One of the most popular was "Gunning without Game," a picture made to illustrate the comparative attractions of game shooting and clay pigeon shooting in which the latter comes off very well indeed. This was seen by the Duke of York and the Duke of Gloucester, who were extremely interested.

I.C.I. do not expect to book many orders on their stands, as their products are principally raw materials for many trades. Nevertheless a number of genuine inquiries have been received for products of use to home manufacturers, and many distinguished persons have visited the stand.

Gas Conference at Birmingham

About 500 delegates on Tuesday attended a joint conference at the Birmingham section of the Fair, organised by the Institution of Gas Engineers, the Society of British Gas Industries, the British Commercial Gas Association and the National Gas Council. Sir Arthur Duckham presided, and at a luncheon attended by the delegates the speakers included Mr. H. E. Copp, President of the Institution of Gas Engineers. In most countries, he said, gas and electrical interests were more or less reconciled, and each industry recognised its respective potentialities and limitations, but here just the opposite conditions existed, and antagonism was fostered by all parties. The gas industry deserved well of the public of this country, which it had served faithfully for over a century, and he believed the future prosperity of the nation would be well served by the increasing use of gas.

At the second session of the Conference on Wednesday, the question of fuel problems in Britain was introduced by Dr. C. H. Lander, Director of Fuel Research in the Department of Scientific and Industrial Research. The potentialities of the economic development of the hydrogenation of native coal at the present stage, he said, could scarcely be fully estimated. It had been shown at the fuel research station that it would be practicable, from the technical point of view, to obtain upwards of 120–130 gallons of petrol per ton of coal treated, and it would appear, from careful analysis of data, that this petrol could be produced at a price which was beginning to bear a close relationship to the import price of petrol if the effect of the preferential duty was taken into account. He thought it would be generally agreed that what had been said forecast the continued and increasing importance of the gas and carbonising industries upon national fuel problems. Even with the processes already commercially available it would be possible, within a measurable period of years, for the gas and allied industries to render the country smokeless, and to wipe out the raw coal burned in the domestic grate, at the same time providing greater amenities to the householder and effecting an enormous national saving from the effects of smoke.

Mexican Market for Paint and Varnishes

Britain's Competition with United States

THERE is a brisk demand for paints and varnishes in Mexico, stimulated of recent years by a considerable amount of building activity. Some 80 per cent. of the import trade is controlled by the United States, but the competition of Great Britain and Germany is being felt. A review of the paint, varnish and lacquer market by the U.S. consul at Mexico City states that the five paint and varnish factories in Mexico City confine their activities to the manufacture of medium grade paints and varnishes. A good deal of the raw materials used, such as pigments and dry colours, are obtained in Mexico and the combined annual production of the factories during 1928 totalled 3,585,000 kilos.

Germany has very little representation in Mexico in the sale of paints, but has introduced a cheap grade of German lacquer that is now being sold on this market, although the largest portion of the imports from Germany is still confined to dry colours in powder or crystal form.

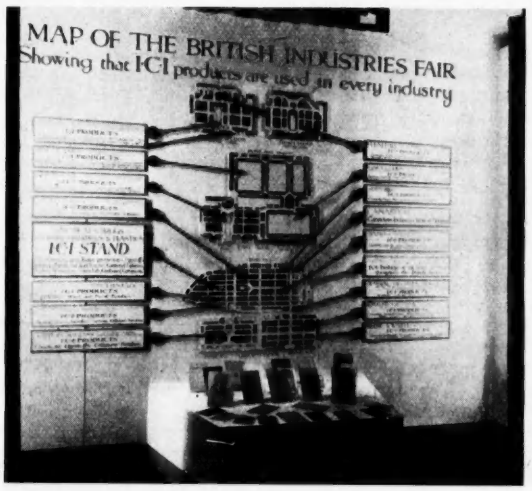
The import figures below, compiled from unpublished reports of the Mexican Bureau of National Statistics of the Mexican Government, show the imports of paints, pigments, and varnishes from the principal exporting countries during 1928:

	Kilos.	Mexican pesos.
United States	263,075	302,630
Germany	17,669	23,050
Great Britain	22,665	18,650
France	4,254	5,452
Others	2,112	2,524
Prepared Colours and Paints		
United States	1,491,469	1,326,777
Germany	157,429	174,494
Great Britain	235,676	170,075
Netherlands	32,387	44,431
Others	30,338	32,044

(£1=9·76 pesos.)

The British Industries Fair, 1931

Exhibits on the stand of Imperial Chemical Industries, Ltd., at Olympia.



ABOVE AND BELOW—TWO OF THE ALCOVES AT THE SIDE OF THE STAND, ILLUSTRATING TYPICAL PRODUCTS OF VARIOUS CONTINENTS AND THE I.C.I. EXPORTS WHICH THEY NECESSITATE.

CENTRE—THE INGENIOUS DIAGRAM AT THE END OF THE I.C.I. STAND SHOWING A PLAN OF OLYMPIA AND THE CHEMICAL PRODUCTS NEEDED BY EACH SECTION IN THE EXHIBITION.

The Chinese Market for Coal Tar Dyes

The Largest Consumer of Indigo

A number of interesting peculiarities about the dyestuffs market in China are dealt with in the following article, which is reprinted from a recent issue of "Commerce Reports," and is based on reports from Mr. A. Bland Calder, U.S. Assistant Commercial Attaché at Shanghai, and Mr. H. D. Robison, U.S. Trade Commissioner at Tientsin.

CHINA is the world's largest import market for coal-tar dyes. As there is practically no domestic production, Chinese demand is met almost exclusively by imports—principally from Germany, the United States, the United Kingdom, Switzerland, the Netherlands, and France. Blue has been adopted generally by China's half billion people as the colour of their working dress. For this reason China is not only the largest world importer of indigo, but probably uses more of this characteristic blue than any other country. In an active trade year, 1929, China bought nearly £4,000,000 worth of coal-tar dyes from abroad, more than three-fifths of which was indigo.

Possibly because Chinese dye requirements are based largely on the essential demand of the working class, regardless of adverse economic conditions, reports of the China dye trade during 1930 compare favourably with those of average years. Conditions in this trade, however, appear to have been more encouraging in northern China than in the southern provinces. For the purposes of this discussion North China is arbitrarily delimited by the Yellow River on the south and Chingwangtao on the north. South China, therefore, comprises all of the remainder of the country as far as the southern boundary.

South China

Imports of dyes and colours into South China during 1930 were on a restricted scale as compared with 1929. The uncertainties of the silver market, as well as disturbed conditions over large areas of the interior, were contributory causes, limiting consumption to an estimated 85 per cent. of the normal. Prosperity, anticipated from bumper summer and autumn crops, generally did not materialise, owing largely to the currency situation. Poor foreign markets for Chinese produce likewise resulted in greatly reduced exports, and hence limitations in Chinese buying power. Sales of dyes, accordingly, were effected, even though their prices in silver currency during 1930 were not raised appreciably above those obtaining a year before, when silver was at a much higher level.

Especially keen competition between foreign suppliers throughout the year was responsible for keeping the local prices down to substantially the level of the previous year, whereas ordinary trading conditions would have necessitated a rise in price to offset the fall in silver exchange. Competition was especially keen in sulphur black, Japanese suppliers taking a very aggressive position in the market. British manufacturers continued active in their attempts to gain a stronger position.

Wider Use of "Quick Indigo"

In artificial indigo there is a consistent drift to the use of goods of higher concentration than the 20 per cent. paste which for so many years has been the standard form for the China market. Savings in freight, handling charges, and, in some cases, in internal taxes on these higher concentrates, together with difficulties of transport, especially in remote parts of the interior of China, are factors which have contributed steadily to an increased demand for the concentrates since their introduction into the market a few years ago. Competition in the indigo field has been so marked that business has been done virtually at a loss. Experimental shipments of Italian indigo have come upon the market in the past year, but Italian efforts have not been very successful.

Competition among the native dealers involves, to a large extent, special packing or wrapping, and special colourings or labels. Many of the Chinese dealers and distributors buy in bulk and repack in their own packages, marketing the goods under their own trade marks or labels. Others want the packing done in specific ways by the manufacturer abroad, some demanding, say, that a silver dollar be included in every tenth tin (to stimulate demand among dye house workers for a particular brand during the introductory stage). Expansion in the dyestuffs market in China, particularly in colours, is bound to result from any improvement in the economic condition of the people.

North China

The 1930 market for imported dyes in North China was fairly stable as far as consumption was concerned, and sales were estimated to have equalled those of an average year. Although the consumption of dyes failed to show any large increase, under the existing conditions, 1930 is considered to have been almost a good trade year.

The following are estimates of the consumption of all dyes in the North China market :—

	Lbs.
Indigo paste	16,670,000
Sulphur black	10,000,000
Direct black	700,000
Congo red	700,000
Direct blue	700,000
Methyl violet	300,000
Auramine	100,000
Acid scarlet	300,000
Others	300,000

Competition in the North China dye trade is principally between the United States, British, German, Swiss, and Japanese brands. Sales of American dyes have shown a gradual increase during recent years. As the American "chops" (trade marks) become better known, it is thought that eventually they will lead all others in the sale of dyestuffs in North China. The advance of the American firms in the North China market is said to be the result of improved distributing methods and of live sales organisations.

British Sales Steady—German Decline

British manufacturers have continued to maintain their position as suppliers of dyestuffs in North China markets for several years. It appears, however, that they are not making substantial gains in this trade. At one time German manufacturers of dyestuffs dominated the North China market. To-day they sell more than any other manufacturers, but it is reported that their sales are gradually decreasing. Swiss dye manufacturers are practically out of the Tientsin market, but still continue to get some business in Shantung Province and Manchuria. Japanese dye producers are said to supply the largest share of the sulphur black sold in North China. On various occasions throughout 1930 it was reported that Japanese manufacturers were contemplating the placing of other dyestuffs on the China market.

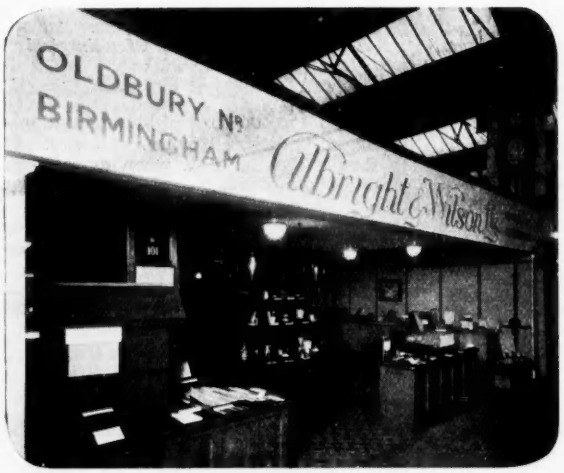
Practically all dyes in North China markets are sold on long credit terms. Payments usually are made on various Chinese settlement days, which means that in most cases four months' credit is extended. Collections often are held up by the slow, and sometimes restricted, means of transportation of silver over the long distances between interior consuming centres and the ports of entry.

The outlook for the sale of dyes in China during 1931 is reported as good. Importers and dealers alike expect a better year than the past two, and practically all the old stocks that came into China under a more favourable exchange rate are gone.

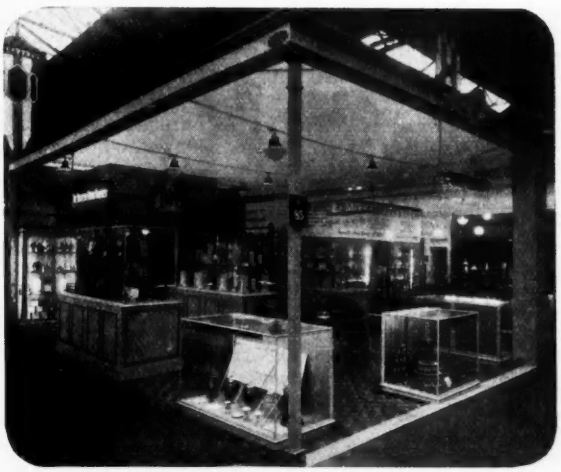
Markets for Paints, Varnishes, etc.

A CONFIDENTIAL report on the market for paints, varnishes, etc., in the Republic of Panama and the Panama Canal Zone has been prepared by the Department of Overseas Trade from information furnished by the Acting British Consul at Colon and issued to firms whose names are entered on its Special Register. United Kingdom firms desirous of receiving a copy of this report, together with particulars of the Special Register service of information and form of application for registration, should communicate with the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. (Reference B.X. 7,018 should be quoted.)

Some Chemical Stands at Olympia



ALBRIGHT AND WILSON, LTD.



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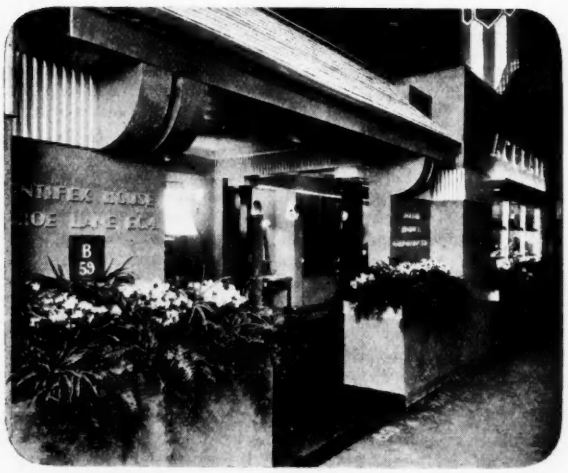


ACETATE PRODUCTS CORPORATION, LTD.

WHIFFEN AND SONS, LTD.

A Survey of the World Position of Nitrogen.—(II)

By G. C. Riley, M.A., B.Sc., and H. G. Bott, Ph.D., A.I.C.

The following paper was presented by the authors on Saturday, February 7, at the works of the Chemical and Metallurgical Corporation, Runcorn, before the members of the Manchester and District Junior Gas Association.
The first instalment appeared in "The Chemical Age" last week.

After the war, the production of synthetic ammonia, in Germany especially, continued to increase rapidly, and it was largely due to this increase that in about 1925 the world production of synthetic nitrogen equalled that of Chile nitrate and by-product ammonium sulphate combined, and since then it has left them quite out of the running, and we seem to be approaching, if we have not yet reached, a position of over production. The world nitrogen consumption for the fertiliser year 1929–1930, which is of the order of 2½ million tons, has only increased by 4½ per cent., compared with increases of 14 per cent. for 1928–1929 and 25 per cent. for 1927–1928. This may indicate an approach to the saturation point of the world nitrogen market, or it may be due to the economic position of the farmers who have curtailed their expenditure generally.

Developments at Billingham

The I.C.I. factory at Billingham, which started operation in 1923, in 1927 was manufacturing 19,000 tons of fixed nitrogen per annum, and for 1931 its production is estimated at 150,000 tons. The German I.G. is producing about 500,000 tons per annum, and projecting an extension of 250,000 tons per annum. In America an estimate for 1930 is about 150,000 tons and for 1931, 290,000 tons.

In addition to this there are also plants in various countries in production and projected. In Norway, the arc process has almost been displaced by ammonia plants, the electrical power being utilised for the production of hydrogen. The other systems in use are all developments of the original Haber process, working at different pressures or temperatures, or using newer catalysts. Billingham uses the Haber process, and the source of hydrogen is water gas. The Claude process works at about 1,000 atmospheres. The Casale process works at 600–700 atmospheres and about 500° C., whilst the Mont Cenis process works at 100 atmospheres and temperature about 400° C.

The Mont Cenis process is extremely interesting because of the possibility of working at a lower temperature, due to the great activity of the catalyst employed. The reduction in working temperature allows the use of ordinary Siemens Martin steels instead of costly alloy steels, and the probable future developments will be in the discovery of even more active catalysts, as the modern trend in industry is in favour of lower working temperatures.

In addition to the original Mont Cenis plant, completed in 1928 and designed for a maximum production of 24,000 tons of fixed nitrogen per annum, there are plants in operation in Germany, Holland, France and America, and new ones being erected. These newer plants use coke oven gas as the source of hydrogen, which is purified by low temperature condensation of the remaining constituents. The latter contains nearly 50 per cent. of methane, and can be utilised as a fuel. The cost of hydrogen made by this process compares very favourably with that made from water gas. The combination of large iron and steel firms using coke ovens with plants for converting the hydrogen into fixed ammonia, is the rational method for decreasing costs on both sides.

The By-Product Industry

Now let us turn to a consideration of the by-product ammonia industry. At the beginning of the twentieth century the gas industry was in a happy position, as it practically had the monopoly of the ammonium sulphate market, and the product was a distinct asset. The recovery from by-product coke ovens became of increasing importance, but the total output did not keep pace with the demand. After the war there was an upward trend in prices, and it reached the high-water mark in 1920. From this point, however, the rapidly increasing production of synthetic ammonia had its effect, and prices fell away rapidly until now it is only about £8 per ton. What was at one time an important source of revenue has now become, in many cases, a liability.

The yearly output of ammonia from gasworks in this country is roughly equivalent to 170,000 tons of ammonium sulphate, and this still has to be disposed of in some way. It is of no use looking forward to the time when ammonium sulphate will return to its old price, as this state is very unlikely to come about. It must be recognised to-day that the monopoly once held by Chile Nitrate and the gas works is definitely broken. The synthetic industry will be quite able to cope with the demands for the future, and the price of ammonia products will be fixed by the cost of manufacture and not by the quantity available. The question of what has to be done with regard to the ammonia problem by the gas works has been exercising the minds of people connected with that industry for some years.

Ammonia Recovery

Hollings and Smith, in the report of the Ammonia Sub-Committee to the Institute of Gas Engineers in 1930, state that the application of the direct and semi-direct process for ammonia recovery is worthy of examination in works carbonising more than 300 tons of coal per day. In the B.A.S.F. Report for 1930, a comment is that there are only 30 plants in Great Britain which come above this limit, and there are 741 statutory, and a few hundred non-statutory undertakings below it.

In the discussion at the meetings W. Wilson described experiments, in which crude gas, compressed and freed from tar and light oils, was treated with water, and all the ammonia was removed as a carbonate.

In the case of plants in which it is not economical to erect an ammonium sulphate plant for their own ammonia recovery, the only practicable method of disposal is to deliver it to a central factory, where the combined output of several undertakings can be dealt with on an economical scale. Hollings and Smith thought that consideration should be given to the organisation of district co-operative schemes for the treatment of gas liquor. At present the gas works have to pay the chemical factory to remove gas liquor, and this debit increases with the distance from its destination. Parrish recommends the production of concentrated gas liquor of 70 oz. strength by concentration at the gas works, and in THE CHEMICAL AGE of June 21, 1930, considers the economics of the question. He draws the conclusion that in the case of small gas works it pays to concentrate the liquor. Parrish has also described an automatically regulated still for the production of concentrated gas liquor, and this question of automatic control of the concentration is of very considerable importance.

The Chemical and Metallurgical Corporation, having such a central factory for the production of ammonium sulphate, have itself made some effort to solve the problem of the disposal of gas liquor, and to remove the present anomaly that the revenue from the manufacture of ammonium sulphate is taken up in railway costs. This increases with weaker liquor, and it has happened that the fall in the value of ammonium sulphate has coincided with a general weakening in the average strength of gas liquor produced.

The ideal plant for dealing with gas liquor would be some kind of filter which would retain the ammonia contents and allow the water contents to run to waste, but such a filter has not yet been developed, and the only available apparatus is the still, which removes the ammonia as gas and the water as effluent.

Chemical and Metallurgical Corporation

The Chemical and Metallurgical Corporation have given particular thought to the design of an apparatus for the production of 3 per cent. ammonia liquor direct from weaker liquor, and not the production of 20 per cent. liquor for sale as such. The aims have been :—(1) Small size and cheapness of the plant required ; (2) simplicity and ease of control ; (3) freedom from possibility of blockage by ammonium carbonate.

The problem initially seemed very easy of solution, but in

practice it did not prove to be so simple, and the small still we have evolved, although it appears simple, represents the outcome of much experiment and trial. A new principle has been embodied, which has been covered by Provisional Patent No. 39276.

In the " hot " still a steam inlet at the bottom section serves to strip and fractionate the regulated stream of weak liquor entering at the top section, and the stripped effluent flows away at the bottom of the still. The free ammonia and other volatile constituents pass from the top of the " hot " still at about 80° C., into the bottom of the smaller or " cold " still, where it is absorbed by a stream of by-passed weak liquor, and the amount of liquor by-passed in this way can be regulated to give the required concentration in the liquor delivered from the bottom of the " cold " still. (See Fig. 1.)

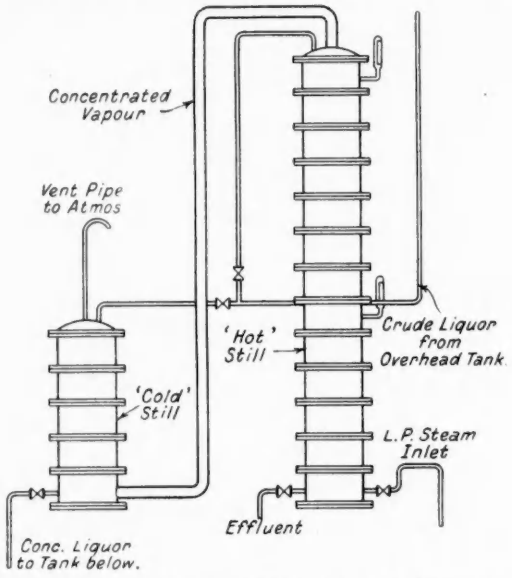


FIG. 1.—GAS LIQUOR CONCENTRATION PLANT, CHEMICAL AND METALLURGICAL CORPORATION, LTD.

No trouble has been experienced with blockage by ammonium carbonate of the still outlet carrying the concentrated ammonia vapours, and the mechanical isolation of the absorber section from this still prevents the undue heating of the former by conduction.

A typical test on this experimental plant with weak liquor of the composition 1·14 per cent. free ammonia, 0·51 per cent. fixed ammonia, gave the following figures :—

Volume of weak liquor concentrated ..	100 galls.
Concentrated liquor produced	29·2 galls.
Composition of concentrated liquor ..	3·46% free amm.
	0·46% fixed ,,
Percentage of free ammonia recovered in concentrated liquor	89·00%
Percentage of fixed ammonia recovered in concentrated liquor	26·50%
Effluent volume	83·5 galls.
Effluent composition	0·58% total amm.
The working loss of ammonia was 1·5%.	
Steam consumption	145 lb. steam
Rate of treatment of weak liquor ..	100 galls. per hr.
	10·7 tons per day

The effluent could, to some extent, be used over again in the scrubbers and so recover the fixed ammonia and increase the natural strength of the liquor, which at present is reduced by additional water washing.

Apart from such contributions to the problem, the outlook for the producers of by-product ammonia is not very promising at the moment, as is borne out by such pronouncements as that of Sir David Milne-Watson in the Annual Review for 1930 in THE CHEMICAL AGE.

A New Chemical Era

So much for the present with its bewilderingly rapid change of outlook in chemistry generally. What were established processes but yesterday are almost out of date to-day, and the plants erected are becoming obsolete. We are undoubtedly only at the beginning of a new era of chemistry, an era of synthesis from the simplest components. Nitrogen and oxygen are produced readily and cheaply from the atmosphere. Hydrogen is produced from water and carbon or coal, by combination with nitrogen produces ammonia, and the oxygen is then used to convert this into nitric acid. The by-products in the preparation of hydrogen are carbon monoxide, carbon dioxide and methane, but already the technique of high pressure reactions with the aid of catalysts has been utilised to effect the combination of carbon monoxide with hydrogen to form methyl alcohol. This alcohol is now turned out commercially in an almost pure state, and is rapidly approaching the price of ethyl alcohol. Pure ethyl alcohol, normal butyl alcohol, acetone, amyl alcohols, ethylene oxide, triethanolamine, and their derivatives are all now produced in large quantities by fermentation or from gases produced from cracking oils, etc., whilst formaldehyde, acetaldehyde, acetic acid, are all produced synthetically from simpler carbon compounds.

It seems very probable that before long the production of organic chemicals will pass into the domain of synthetic chemistry with carbon from coal, oxygen and nitrogen from the air, and hydrogen and oxygen from water as the starting products. If the production of these compounds grows to the extent that seems likely, it is possible that the production of ammonia from nitrogen and hydrogen may become a sideline in the great synthetic industry, and ammonia itself will have completed a cycle, originally a by-product of the gas industry, now a prime product, and later again a by-product, not in this case of the gas industry, but of the synthetic organic chemical industry.

An Appeal to Chemists

[*To the Editor of* THE CHEMICAL AGE.]

SIR,—May I, through the medium of your very valuable paper, appeal to all chemists who are employed in an executive capacity to put themselves under the wing of a recognised scientific society? Registration of scientific chemists, as distinct from pharmacists, is a certainty in the near future, and rightly so.

The Institute of Chemistry was for many years the only authority for scientific chemists, and no words of mine can adequately express my appreciation of the splendid work it has done, and is still doing. The Council of the Institute have carried out their duties in a manner that compels our admiration and profound respect. There are, however, hundreds of good chemists in this country who are doing the best of work, have received an excellent training, but have never had the financial means or for some other adequate reason have not been able to qualify for the Institute's examinations. To such men I say apply for membership of the British Association of Chemists, an association which has worked for years to make scientific chemistry what it should be—a protected profession.

Everyone is aware that there are hundreds of men in this country who have made a real and earnest study of chemistry and who find themselves in a well-nigh hopeless position to-day. Many are out of employment; others receive a mere pittance in return for work of the highest value. The British Association of Chemists will admit all who can show proof of a proper scientific training with the necessary experience to fit them for the vitally important work they do. The association is controlled by men of the highest scientific attainments and their work has been characterised by unselfish devotion to the cause of professional chemistry and to the well-being of its members. The address is The General Secretary, British Association of Chemists, " Empire House," 175, Piccadilly, W.1.—Yours, etc.,

SAMUEL B. BRATLEY,
Analyst to the Leicester Branch of the
February, 1931. National Farmers' Union, etc.

Silver for Chemical Plant

BY a typographical slip the name of the author of the recent paper on the use of silver for chemical plant was wrongly spelt in our last issue. The author was Mr. Donald McDonald (Johnson, Matthey and Co.).

Investigation of Atmospheric Pollution

Annual Report on Observations

THE issue, by the Department of Scientific and Industrial Research, of the 16th report on the investigation of Atmospheric Pollution (H.M. Stationery Office, 4s. net), calls attention again to the existence of the smoke problem and the extent to which attempts to solve it are meeting with success. The smoke evil has been the subject of much scientific investigation in recent years and it might appear that the problem is of recent date. But that is far from being the case. The problem came into existence as soon as the use of raw coal became at all general in large towns, as it did in the thirteenth century. The reactions of our predecessors to the nuisance were extremely violent. Early in the fourteenth century a commission was appointed to investigate cases of the burning of coal in London or parts adjoining, to punish offenders for the first offence, and on the second offence to demolish their furnaces, while a case is recorded in which one unfortunate individual was tried and condemned to death and executed for burning coal in London.

Co-ordinating Observations

As from April 1, 1927, the Department of Scientific and Industrial Research, at the request of a number of lcoal authorities, undertook the responsibility for co-ordinating the observations of atmospheric pollution which, for some years, have been made by local authorities, etc., and for seeing to the conduct of research into the nature of pollution and the best method of measuring it. The cost of this work is met by contributions from co-operating bodies, which consist for the most part of local authorities, supplemented by a grant from the Department. The Department has appointed an Atmospheric Pollution Research Committee to advise on the work, and in order to maintain touch between the central organisation and the co-operating authorities, and to promote the application of the results of the research, an autonomous body, known as the Standing Conference of Co-operating Bodies has been established. Reports by both the Standing Conference and the Research Committee are included in the 16th Report now issued, as well as a report by the Superintendent of Observations.

The Standing Conference mention that in the year of report, 1929-30, they caused inquiries to be made of the co-operating authorities as to steps they had taken to abate the smoke nuisance, since it was felt that knowledge of action taken and experience gained by different authorities might be useful to others. The summary of the replies given in the report indicates that quite apart from the powers given to them under the Public Health (Smoke Abatement) Act of 1926, a number of authorities are taking active steps by enlisting the co-operation of house dwellers and factory owners in dealing with the domestic smoke and factory smoke problems respectively. Domestic smoke is now well recognised to be the principal contributory cause of the smoke nuisance in many of our large towns. Estimates for London and Glasgow have shown that smoke in these cities is 2½ domestic to 1 industrial and 3½ domestic and 1 industrial respectively. The burning of every ton of raw coal in a domestic open grate has further been estimated to cause 10s. worth of damage in many areas. Evidently the town dweller must sacrifice his cheerful coal fire if he is to gain the benefit of a clear atmosphere, and many local authorities, the report indicates, are doing what they can to induce this necessary spirit of self-sacrifice. As regards smoke from industrial furnaces or public premises, the summary refers by way of example to steps taken by Wakefield, Dewsbury, Glasgow, Sheffield and Edinburgh.

A New Investigation

The Research Committee in their report describe a new investigation. That smoke from densely populated districts affects the clearness of the atmosphere throughout wide areas has been shown by the fact that visibility at Valentia on the S.W. of Ireland has been found to be affected by smoke from industrial areas 350 miles away. The Committee have set out to get more information about the spread of pollution by an investigation in progress at Norwich in which daily observations are made of the spread of pollution down wind from the city. The Committee also refer to the development of an apparatus, a description of which is about to be issued, for measuring sulphur, the most actively destructive element of pollution in the air. The interest of sulphur measurement may be illustrated by reference to the various estimates of the damage to buildings caused by that element of pollution, the most recent being by Sir Frank Baines, who estimated that in the last 25 years sulphur has caused damage to buildings to the extent of £55,000,000 to £60,000,000. The apparatus has been specially designed to be simple in operation and suitable for routine measurements.

A comparison of the annual records of pollution from 1915 to 1928 showed that while there was a progressive improvement down to 1921-22, if the evidence for London and Glasgow applies at all generally, little, if any, advance has been made since. The year 1929-30, however, indicates a trend in the right direction; that is the conclusion recorded by the Superintendent of Observations, Dr. J. S. Owens, in his report. Nevertheless, that report adds further evidence, if it be needed, of the injury suffered from smoke by the loss of daylight and of ultra-violet light. Records of ultra-violet light taken at Sheffield show that in November and December of 1929 no ultra-violet light at all was received in the middle of the city. The question of ultra-violet light is also discussed in an appendix dealing with Rochdale contributed by Dr. J. R. Ashworth, which indicates that even by comparison with a station only a mile away, the centre of Rochdale loses as much as 29 per cent. of ultra-violet light during the first half of the year.

The report of the Superintendent of Observations contains the usual detailed tables of the deposits recorded at the various observation stations throughout the year. A table showing the mean monthly deposits at about 70 stations indicates that at 25 there were deposits at the rate of 300 tons or over per square mile during the year, while even the lowest deposits recorded are of the order of 100 tons per square mile per annum.

International Colloidal Syndicate, Ltd.

Official Receiver on Causes of Failure

IN the compulsory liquidation of the International Colloidal Syndicate, Ltd., of Nicholas Lane, Lombard Street, London, the Official Receiver has now issued to the creditors and the shareholders a summary of the company's statement of affairs. This discloses liabilities £7,810 (ranking £7,735), net assets £858 and a total deficiency of £57,117 with regard to the shareholders.

In his accompanying observations the Official Receiver reports that the company was incorporated as a public company in April 1929, with a nominal capital of £75,000 divided into shares of 1s. each. The issued capital is £50,540.

The original cash capital appears to have been privately subscribed by friends and acquaintances of the directors and the promoter on the representation that, by means of a colloidal mill, colloidal sulphur could be produced and placed on the market at approximately half the then existing trade price. The products of a number of industries were stated to be affected by the mill's introduction.

The company eventually installed two mills, but by the time the first was in working order it appeared to have found that colloidal sulphur could not be made in commercial quantities by means of the mill at a price which yielded a profit. In June last a subsidiary company was incorporated to manufacture and exploit a non-inflammable film.

The syndicate has had no revenue and lived on its capital which has been spent in development work and equipment, etc., without, however, producing sufficiently good results to cause trades to buy and install colloidal mills, or to warrant the company inviting the public to subscribe further capital. At all material times, adds the Official Receiver, there appears to have been hostility between the Board and the vendors and disagreements between various members of the board, all of which must have been harmful to the company.

The liquidation remains in the hands of the Official Receiver.

Origin of the Solazol Dyestuffs

Vat Colours or Naphthols

A MEETING of the Manchester Section of the Society of Dyers and Colourists was held on Friday, February 20, when Mr. J. S. Wilson, of Scottish Dyes, Ltd., read a paper on "Solazol Dyestuffs." Mr. F. Scholefield presided.

Mr. Wilson stated that the discovery of the use of the amino-anthraquinone compounds for acetate silk, simple though it turned out to be, was overlooked until brought to light again by British manufacturers. The discovery of the esters of vat colours was revealed by two different firms, one a British firm and the other a foreign firm, although the route to the manufacture of these colours was different in each case. It was rather a coincidence that these two discoveries should have been both duplicated, the Duranol colours by British Dyes and Scottish Dyes (the patents of the latter were lodged a few weeks after the lodging of the British Dyestuffs patents), and the soluble esters of vat colours by Durand and Huguenin, who concentrated, at first, on esters of Indigoid colours, and Scottish Dyes, who concentrated on esters of anthraquinone products. In the case of the esters both routes were, as stated, different, and therefore the field was open to both firms.

Colours of the Future

It was commonly agreed that the colours of the future were the fast ones, and at the present these were represented by vat colours. Even the greatest enthusiast for vat colours had to consider the naphthols, which gave shades of depth and brightness which simply could not be obtained with vat colours. Unless some new and excellent vat red was discovered which would equal them, the naphthols had come to stay. Therefore, for the present, the naphthols must be admitted for at least the red shades, although possibly this point might be regarded as controversial. In any case, Mr. Wilson stated, if he was understating the case for naphthols, any increase in the important products in this range would surely increase the possible Solazol field. The red shades, at least, would probably be supplied by the naphthols, and the blue, green, violet, purple, grey and brown shades by the vat dyestuffs.

Unfortunately, vat colours and naphthols were applied by widely different processes, and the combination of the two was not easy. Following the esterification of the vat colours, one who did not fully realise the chemical processes involved would say that the logical sequence would be the esterification of the naphthols. The soluble vat esters were made by attaching soluble groups to the ketonic groups of the vat colours which gave solubility just as a sulphonic acid group imparted solubility to acid wool colours, and, in fact, most of the esters could be applied to wool like acid colours. In the naphthol range it had always been his opinion, Mr. Wilson said, that naphthols made by coupling anthraquinone amines would give the fastest to light results, and this was borne out by the fast results obtained when Fast Red Salt AL alpha-amino-anthraquinone was introduced. Solazol colours might be made using quinone bases such as anthraquinone, and this, of course, had narrowed the field, although this had been in the right direction—namely, among the fastest.

The Chemistry of the Solazols

The normal sequence of development of esterification was therefore followed out at Grangemouth, and Solazol Red 2B. was the result. Dealing with the chemistry on which the Solazols were based, the vat dyestuffs all contained ketonic groups which were capable of forming sulphuric esters. These esters were readily hydrolised and oxidised to the parent colour thus :—R—OSO_3Na, which, on hydrolysis and oxidation, goes to R—O. The research staff found that certain esters of anthraquinone bodies containing amino groups could be diazotised just like aniline without the ester group splitting off as would be expected, as the anthraquinone vat esters were developed by means of nitrite and acid. This was the most important part of the discovery. This diazo ester could then be coupled with any naphthol to form a soluble dyestuff which could be applied to the fibre, and could then be developed, splitting off the ester group to give a naphthol identical to any applied in the ordinary way. In the case of Solazol Red 2B. this product, like ordinary naphthols, was dischargeable when dyed or padded on cotton with an ordinary gum thickening, and this opened out to the printer a wide range of new effects easily obtainable.

Marketing of Pulverised Fuel

Lessons from the Oil Trade

A PAPER on "Pulverised Fuel as a Market Commodity," by E. C. Lowndes, F.Inst.F., was read at the opening meeting of the Midland Section of the Institute of Fuel at the Grand Hotel, Birmingham, on Thursday. The author had set himself to show British shipowners and industrialists that the use of coal purchased in pulverised form with technical service attached would give them commercial advantage in fuel economy both for steam raising and for industrial (*e.g.*, metallurgical) processes ; and to show the coal trade that it could recover its lost markets on sea and on land by adopting the marketing methods of the fuel oil trade, that is to say by making its product available for purchase in a form ready to burn with maximum economy, instead of in a form ready for customers either to employ wastefully or else to commence processing.

The paper excluded the consideration of pulverised low temperature coke because, although technically efficient, low temperature carbonisation had not yet established itself as an industry of serious economic importance. The economy of coal (as of oil) in burning reached its maximum when the coal was burnt in pulverised form, that is to say when its surface area increased fifteen-hundred fold was intimately associated with air. Even large coal consumers in industry (2,000 tons per week upwards) were prevented by the flight of capital from industry, and by their lack of experience in pulverised coal utilisation, from self-equipment for bulk pulverisation. Smaller fuel users in Great Britain such as the average sized industrial works were unable to enjoy the economies of pulverised coal utilisation because neither was such fuel yet available for purchase nor was there in Great Britain any serious widespread and proven experience available to guide them in its application so far as industrial processes were concerned. Our competitors in Germany and America possessed and utilised that experience because of the availability of pulverised coal for purchase as an ordinary market commodity. Oil prices per unit of heat were double that of raw coal but, notwithstanding, the use of oil was rapidly expanding owing to its efficient utilisation reducing the ultimate fuel cost to the user. The oil trade not only sold an article good in itself but provided its customers with technical advice and with economical apparatus.

Applying oil trade methods to the coal trade, a description (based upon years of German trading experience) was given of the cycle of operations involved in the manufacture, transport and marketing of pulverised coal. The user was given descriptions with illustrations of the method of handling his fuel from its reception at his works to its entry into the furnace, and of burning it with maximum efficiency in cylindrical (*e.g.*, Lancashire) boilers, and in various metallurgical furnaces. Its economies were shown both in actual reduction in consumption, in labour saving, in increased output and reduced scaling losses, together with its advantages in smokeless combustion, ease of handling, flexibility, response to automatic control, etc. Heat units in the form of pulverised coal of high quality (*not* having its origin in "low grade fines" or "pit head dump") would be sold at one-half the price of heat units in the form of oil and would perform equal duty in all respects, and the fuel would be comparatively sulphur-free, an important consideration in many industries.

Easter Fares to Belgium

THE Belgian National Railways announce that cheap 15-day excursion tickets will be issued daily from April 1 to April 7 in connection with the Easter Holidays and the 12th Brussels Commercial Fair, which takes place from April 8 to April 22. The return fares from London and Dover to Ostend vary from 61s. 7d. first class rail and boat to 30s. 11d. third class rail and second class boat. For a few shillings extra excursion tickets can be issued to Bruges, Ghent, Brussels, Antwerp, Dinant, Liége, etc. In addition, the week-end tickets (without passports) will be specially extended for use on Thursday April 2, returning Sunday, Monday or Tuesday from London and Dover to Ostend and Ypres. A special night service will leave Victoria at 11 p.m. on Thursday, April 2, arriving Ostend about 5 a.m. In the return direction, the night service leaves Ostend at midnight on Monday, April 6, arriving Victoria at 7.15 on the Tuesday morning.

Trade Publications

Heat Exchangers

The "A.P.V." patent regenerative heat exchangers for the heating and cooling of oils is dealt with in a pamphlet just issued by the Aluminium Plant and Vessel Co., Ltd., Wandsworth, London. Details are given of the construction of the exchanger, one of the great advantages of which is its elasticity of output. By merely adding plates it can be increased to deal with larger quantities when more or larger oil boiling plants are installed. It can also be modified, when circumstances demand it, to give a greater or smaller degree of cooling.

Gauges

A new catalogue of their test gauges for special purposes has been issued by the Budenberg Gauge Co., Ltd., Broadheath, near Manchester. Some twenty classes of gauges are described and illustrated, including high pressure Admiralty gauges, oxygen and hydrogen gas gauges, special gauges for thick liquids and pulpy substances, ammonia refrigerator gauges, distance electrical pressure gauges, etc.

Pumping Solids

A new sectional catalogue has been published by Blackstone and Co., Ltd., Stamford, Lincs., describing the latest types of their "Unchokeable" Pump. The great variety of duties which have been carried out successfully includes the pumping of unscreened sewage, gravel, sand, ashes, swarf and scale, cotton and wool waste, latex, sisal fibre, and many other hard and soft solids and semi-solid materials. This pump, owing to its large interior passages, will handle successfully and without the use of knives, cutters or shearing by friction, practically any solid which will pass the inlet. Another section of the catalogue describes the "Unchokeable" gravel pump, in which the parts in contact with the mixture are made of cast or manganese steel to resist the abrasive action of the materials handled. The pump is made in standard sizes from 1 in. to 14 in. in both horizontal and vertical types.

The Drayton Regulator and Instrument Co., Ltd., West Drayton, Middlesex, has issued a new leaflet describing their sight glass for the inspection of the flow in pipe lines from ¼ in. to 6 in. diameter, and particularly adapted for use on the outlet side of steam traps.

"Bakelite Progress" is the title of a new publication describing the applications of this material in varied industries, which is to be issued periodically by Bakelite, Ltd., 68, Victoria Street, London. No. 1 has an attractive coloured cover showing a fisherman using a Bakelite fishing reel.

A new booklet dealing with Colloidal Acheson-Graphite lubricants has been prepared by E. G. Acheson, Ltd., 40, Wood Street, Westminster, and the Acheson Oildag Co., and a series of technical bulletins providing further details is to be issued from time to time.

Chemical Traders and Key Industries Duties

THE British Chemical and Dyestuffs Traders' Association, Ltd., advise members that it is now obligatory to make the following endorsement on entries relative to goods liable to key industry duty, where the goods are purchased c.i.f.: "I declare that the internal freight, sea freight and insurance have been paid by senders, all cost of packing is included in the invoice price, and that no separate invoice has been or will be given for any portion of these charges." Under the Customs Consolidation Act, the department has authority to demand that details of cost of freight and insurance shall be shown separately from the cost of the goods. Had Customs insisted on these particulars being furnished in detail the Association would have resisted it as being unnecessary and liable to cause difficulty and delay. As an alternative, the department has introduced the above endorsement.

"It is, of course," the Association states, "quite superfluous and serves no useful purpose, but, beyond the extra clerical work involved it does not impede the clearance of entries. Members are therefore recommended to conform to this new demand, declaring that the cost shown on invoices of dutiable goods purchased c.i.f. does include freight and insurance."

New York Chemical Exposition

Interest in Colloid Mills

THE thirteenth Exposition of Chemical Industries will be held in New York during the week of May 4 to 9, 1931. This biennial exposition regularly includes exhibits not only from all of the forty odd industries classified as chemical, but also from any others that produce material or equipment used in the chemical industries. Many a plant executive, harassed by some unsatisfactory feature of his own manufacturing process, has found in the exposition the solution of his problem. The point may be illustrated by reference to the difficulties encountered in many industries in grinding and mixing materials to required specifications.

Even before colloidal chemistry became generally recognised as a distinct and important branch of the science, the grinding of many materials to colloidal fineness and homogeneity was a vexatious problem in many industries; and in recent years the growing exactions of modern industry have placed a premium on such grinding. In the preparation of emulsions, in the dispersion and disintegration of minerals, ores, pigments, etc., in water and other liquids, in paint grinding and in the grinding of fibrous materials, and for intimate mixing, colloid mills as developed in recent years mark a great advance over earlier equipment. Lithopone, gilsonite, pitch, red lead, magnesium, calcium, barium and strontium carbonate, satin white, china clay, rock asphalt, dyes, sulphur, rubber fillers and arsenate of lead are a few of the materials that have been successfully ground on one line of colloid mills that will be shown at the Exposition. Also various fibrous material, even including wood pulp for paper making, have been ground or refined in these mills. Recently a marked increase in the general preference for colloid equipment has given great encouragement to the manufacturers of such equipment. It is expected that the colloid mills to be shown by one exhibitor will include the latest addition to his line—a small but practical laboratory model with a standard 3,600 r.p.m. direct-connected motor. Such a mill will be valuable in many plant research laboratories, as well as in the laboratories of colleges and universities teaching colloidal chemistry. Commercial sizes of this line of mills range from capacities of 100 to 5,000 gallons per hour.

British Caustic Soda Exports to Peru

GREAT Britain is now by far the largest supplier of caustic soda to Peru and during 1929 completely shook off the rivalry of the United States. The British product is greatly preferred not only to that of other countries, but even to the home product, which is made in appreciable quantities and sold at lower prices than the imported article. Most of the caustic soda requirements are imported and the figures (metric tons) for imports in 1928 and 1929 were:

Country of Origin.	1928.	1929.
Great Britain	557	844
United States	515	293
Germany	29	33
Netherlands	114	13
Other Countries	110	1
Total	1,329	1,184

Tanker for Export of Sulphuric Acid

IT is reported from Gdynia, Poland's new port on the Baltic, that a local firm will shortly put into service a tanker specially adapted for the transport of sulphuric acid. With proper facilities for overseas transport, states the U.S. Commercial Attaché at Warsaw, it is believed that the export of sulphuric acid from Poland can be considerably increased, especially to Western European markets that are now closed to Poland because of lack of special transport facilities.

During 1929 Poland exported 13,308 metric tons of sulphuric acid, with 10,602 tons going to Germany, 900 tons to Czechoslovakia, and 364 tons to Rumania. For the first eight months of 1930, sulphuric acid exports amounted to 12,381 tons, of which 10,794 tons went to Germany, 561 to Czechoslovakia, and 374 tons to Rumania. It will be noted, therefore, that sulphuric acid exports from Poland have been practically confined to neighbouring countries.

A Home for Technical Societies

Appeal for Funds

APPEALS are now being issued for funds for providing a central building in London for scientific and technical societies. In one signed by Sir D. Milne-Watson, chairman of the committee of management, it is estimated that a principal sum of £350,000 will be required to defray the cost of the complete building, including the purchase of leases, etc. It will be necessary to secure £100,000 in cash by June 24, 1931, when the options on the site expire, and towards this amount a substantial sum has been received. The annual upkeep of the building will be covered by the sums received as rent from the constituent societies and institutions and associated bodies, and such other tenant institutions as may be housed therein. The council of management appeal to leaders of the industries concerned and to individual members of the constituent institutions to contribute to the required sum, and thus enable the scheme, which is of far-reaching and vital importance to the progress of science and the prosperity of the basic industries of this country and of the Empire, to be put into operation without delay.

In another circular, signed by Professor Thorpe, Dr. Herbert Levinstein and Mr. J. Arthur Reavell, it is stated that the chemical wing of the building will be a vertical section throughout the seven floors it is proposed to erect, and, with the exception of the restaurant and library floors, which will be continuous, will be separated on each floor from the remainder of the building. It will have its own entrance, and will therefore constitute a definite and distinct "Chemistry House." The need, it is added, is imperative, and if the present opportunity is allowed to pass many years will elapse before another will recur.

Borax Consolidated, Ltd.

Interests in Potash

SPEAKING at the thirty-third ordinary general meeting of Borax Consolidated, Ltd., in London on Wednesday, the Earl of Leven and Melville (chairman) said the company had made a substantial recovery in profit-earning capacity. Unfortunately, the volume of business was not yet sufficient to offset the present low price of their products, which had, however, remained at stable prices throughout the year. They had supplemented the range in which they were interested by the inclusion of potash.

An opportunity was offered to the American branch of their company to take a substantial interest in an American company which was developing beds of potash ore. A shaft had now been completed and had a very large daily tonnage capacity. It had opened up a number of beds of sylvite, the most suitable potash ore for sale either as mined or for conversion into muriate of potash. These beds were of large dimensions, and were estimated by competent engineers and geologists to contain an enormous tonnage of potash ore sufficient to provide for the requirements of the United States for a very long period. The grade of the ore was eminently satisfactory, and it was anticipated that a refining plant would be in operation by the end of this year. Their own company had, fortunately, in their mine now being operated, the largest and most economical source of production of borax mineral in the world, and this, with their modern works at Wilmington, California, had helped them to meet intensive competition in the United States. There had been a steady increase in the consumption of borax for industrial purposes since pre-war years, and, with a revival in general business conditions, their volume of trade should substantially increase.

Jugoslavian Import Regulations

FOREIGN firms wishing to export drugs and pharmaceutical specialities to Jugoslavia are granted import permits in respect of particular preparations provided that they nominate as their representative a dispensing chemist or wholesale druggist not engaged in retailing medicines direct to the consumer, a master or Doctor of Pharmacy who must be a Yugoslav subject qualified according to Law; or manufacturing chemists and laboratories.

Chemical Matters in Parliament

The Beet Sugar Subsidy

IN reply to several questions in the House of Commons on February 19, Dr. Addison stated that the total amount of subsidy paid on home-grown beet sugar and molasses from the commencement of the operation of the British Sugar (Subsidy) Act up to February 16, 1931, was £22,115,727 0s. 6d. It was not possible at this date to give reliable estimates of the probable subsidy payments in the remaining three years of the subsidy period, as many unknown factors influenced the position, such as the acreage of beet, the yield per acre, and the sugar content of the roots. The recently announced abatement in the reduction of the subsidy due next October would involve a fall from 13s. to 7s. 9d. per cwt. of sugar, instead of from 13s. to 6s. 6d. as under the Act, the total abatement representing a sum of about £200,000. This special concession would be deducted, in the event of sugar prices rising substantially, from the normal subsidy which would be due in the last two years of the subsidy period. The Government's recent proposals had been accepted by 12 of the 18 beet sugar factories, but the Anglo-Dutch group were not prepared to come into line with the others.

On February 26 the House of Commons agreed to a supplementary estimate of £600,000 for the beet sugar subsidy, rendered necessary by the larger acreage devoted to sugar beet and the increased tonnage now obtained per acre.

The Castleford Explosion

Mr. Tom Smith (House of Commons, February 25) asked the Secretary of State for the Home Department whether he proposed to take any action with regard to the recommendations contained in the Report on the inquiry into the explosion on July 4 last at the works of Hickson and Partners, Ltd, Castleford.

Mr. Short: Yes, Sir; and steps are being taken by the Factory Department to bring the recommendations in the reports to the notice of manufacturers concerned. In addition factory inspectors will pay special visits to the works and discuss with the management what further steps, if any, are required to give effect to the recommendations.

Low Temperature Carbonisation

Mr. Shinwell, Secretary for Mines, announced on February 23 that a report on the recent test made by the Government Fuel Research Board on the Turner process of low-temperature carbonisation of coal at Coalburn, Lanarkshire, had now been prepared, and would be published as soon as Mr. Turner's views on it had been received and considered.

Poison Gas Protocol

The following eleven European States have not yet ratified or acceded to the Geneva Protocol prohibiting the use of poison gases, it is announced by Mr. Dalton, Under-Secretary of State for Foreign Affairs, in the House of Commons on February 23: Albania, Bulgaria, Czechoslovakia, Estonia, Greece, Hungary, Latvia, Lithuania, Luxemburg, Norway and Switzerland.

Institution of Chemical Engineers' Annual Meeting

THE ninth annual corporate meeting of the Institution of Chemical Engineers is being held under the presidency of Mr. T. Arthur Reavell, at the Hotel Victoria, Northumberland Avenue, London, on Friday next, when the Osborne, Moulton and Junior Moulton medals will be presented, and there will be a discussion on "The Education and Training of the Chemical Engineer." The ninth annual dinner is being held at 7.30 p.m. in the Grand Hall of the Hotel, when many distinguished guests will be present, including the presidents of kindred institutions and societies. The toast of "The Institution of Chemical Engineers" will be proposed by Lord Rayleigh, F.R.S., and other speakers will include Sir Ernest Benn, Sir Harold Hartley, and Dr. W. R. Ormandy.

On Thursday next the Institution is holding a meeting in the rooms of the Chemical Society, Burlington House, London, where several papers will be presented. On Thursday evening, in the Institution of Civil Engineers, Westminster, Baron Gian Alberto Blanc is lecturing on "The New Italian Leucite Industry," and the Institution's two-day programme also includes discussion of a paper on "The Flow of Gases at High Pressures Through Metal Pipes," to be presented by Mr. D. M. Newitt.

From Week to Week

THE DEATH is announced from Berlin of Baron Hans Von Liebig, grandson of the famous chemist.

GERMAN POTASH SALES in 1930 are reported to have amounted to 1,356,753 tons, being 44,653 tons less than in the previous year.

MR. ROBERT S. SEATH, a research student at St. Andrews University, was badly burned on Wednesday, when a quantity of benzine on which he was experimenting caught fire in the University chemical laboratory.

UNIVERSITY NEWS—*Aberdeen*: It has been decided to confer the honorary degree of LL.D. on Sir Frank Edward Smith, F.R.S., Secretary, Advisory Council, Department of Scientific and Industrial Research.

FATAL ACCIDENTS in chemical works and factories during the month of January numbered 8, out of a total for 197 fatal industrial accidents in Great Britain and Northern Ireland. There was one death from lead poisoning contracted in a paint and colour works.

CONSIDERABLE DAMAGE was done by fire on Friday, February 20, at the oil refinery works of Ferguson and Menzies, oil and resin merchants, 451, Lawmoor Street, Glasgow. At one time a large quantity of oil, valued at £20,000, was endangered, but the fire brigade managed to prevent this being involved.

A CONFIDENTIAL MEMORANDUM on methods of trading and terms of payment prevailing in business with Denmark, together with notes on the general features of the market, prepared by the Commercial Secretary to H.M. Legation at Copenhagen, can be obtained from the Department of Overseas Trade, 35, Old Queen Street, London, on quoting Ref. No. C.X. 3463.

THE FIFTH GENERAL MEETING of the Dechema, Deutsche Gesellschaft für Chemisches Apparatewesen E.V. (German Society of Chemical Apparatus) will take place with that of the Verein Deutscher Chemiker (Society of German Chemists), in Vienna on May 28 and 29, 1931. The subject chosen for the symposium is "The Separation of Solid and Liquid Substances." Offers of contributions should be sent in not later than March 15, 1931, to the head office of the Dechema, Seelze b. Hannover.

IN A NOTE on Scottish blast furnaces, our Glasgow correspondent states that the only ironmasters producing blast furnace by-products at the present time are James Dunlop and Co., Ltd., with works at Tollcross. This considerably curtails the production of blast furnace pitch and tar, also virgin blast furnace oil. The last named product is the "lifeblood" of quite a number of works in the district which produce high boiling and ordinary cresylic acids, and possibly other oils will require to be utilised as a substitute. It is not known when "Summerlee," "Shotts," Glasgow Iron," and "Glengarnock" will resume operations.

RECENT WILLS include Mr. James Arthur Kershaw, of Headingley, Leeds, oil merchant (net personalty £21,011), £23,286. Mr. Charles Page, founder of Charles Page and Co., chemical merchants (net personalty £16,756), £32,501. Mr. Beerend Andries, of Streatham, manager of the asphalt department of the Asiatic Petroleum Co. (net personalty £15,881), £16,019. Mr. James Allen Riley, manager of Abraham Barlow, Ltd., Hampson Mills, Bleachworks, Bury, Lancs, and appointed manager by the Bleachers' Association in 1910 (net personalty £21,511) £22,840. Mr. Joseph Jack, Glasgow, oil and grease manufacturer, personal estate in Great Britain, £18,168.

AN INTERESTING SIDELIGHT on the Indian resin industry is provided by the resolution recently passed by the local Government in the United Provinces. A satisfactory feature of the past year, it is stated, is that the Rumaun resin industry continued to be an important source of profit to the Forest Department. Since the Government transferred the distillery to the Indian Turpentine and Rosin Co., they have received an average annual profit of about rupees 2 lakhs. In spite of the market for turpentine being very poor during the past year, the company was able to take approximately 86,000 maunds, of crude resin from the department. The year's working has thus yielded a net profit of Rs. 223 lakhs including the sum of Rs. 30,000 received by Government as dividend on their shares in the company.

THE NINTH ANNUAL MEETING of the British Chemical and Dyestuffs Traders' Association will be held in London on Wednesday, April 29, and will be preceded by a trade luncheon.

A BILL effecting a compromise on the Muscle Shoals power plant was passed by the United States House of Representatives on Friday, authorising the Government to work the plant and lease the nitrate plants to private interests.

DR. A. P. LAURIE, Professor of Chemistry to the Royal Academy of Arts, and an expert in detecting artistic forgeries, is to lecture at the M'Lellan Galleries, Glasgow, on March 4, on "Microphotographs of Rembrandt and his School."

EMPLOYERS in the dyeing and finishing industry have invited trade union representatives to resume negotiations on the employers' demand for a 10 per cent. reduction in wages, and a conference is to take place next Monday.

UNEMPLOYED in the chemical industry of Great Britain and Northern Ireland on January 26, numbered 18,316, or 17·7 per cent. of the total number of insured workpeople in the industry. This is a decrease—the first for some time—of 0·2 per cent. on the figures of the previous month, but an increase of 9·8 per cent. on those of January, 1930.

FOUR MEN were overcome by fumes while at work in a tar distilling tank at the Shettleston Oil and Chemical Co., Ltd., Barrachnie, Shettleston, last week. It appears that two of the men collapsed and two others were overcome while attempting to rescue them. Other workmen, however, managed to extricate all four and artificial respiration was successfully applied.

MR. EDOUARD GROSSE, overseas sales director, of J. D. Riedel E. de Haën A.-G. (E. de Haën Works) Seelze, near Hanover, reached London on Wednesday. Communications will reach him if addressed C/o J. Sherman and Co., Ltd., Downham Mills, Tottenham, N.17, sole concessionaires for the sale of E. de Haën's productions in the United Kingdom, Northern Ireland, and Irish Free State.

A CONFERENCE of representatives of public bodies and industries throughout Teeside was held at Middlesbrough on Wednesday, when it was agreed to form a development committee for the whole area, and later to open discussions with Tyneside industrial representatives with a view to forming a North-East Coast Development Board. The Mayor of Middlesbrough presided over the conference, and Imperial Chemical Industries, Ltd., were represented by Mr. G. A. Pittar.

AN ORDINARY SCIENTIFIC MEETING of the Chemical Society will be held at Burlington House, London, on Thursday next, when the following papers will be read: "Studies of Valency. Part XV. Absorption Spectra of Polyhalide Ions," by F. L. Gilbert, R. R. Goldstein and T. M. Lowry; and "The Reactions of Substituted Ammonium Aryloxides and of Related Compounds. Part I. The Preparation and Thermal Decomposition of Some Tetra-substituted Ammonium Aryloxides," by R. V. Henley and E. E. Turner.

PRESIDING at the meeting of the British and South Pacific Trading Co., Ltd., on Tuesday, Mr. T. T. Aikman said that the Chilean nitrate merger was nearing completion, and, unless any unforeseen delay occurred, he hoped the Preference dividend on Cosach shares would rank from January 1, 1931. In the case of the Lautaro Co., he said, the dividend due on January 1, 1931, was deferred, but he understood it would be paid soon after Cosach was formed, and subsequent dividends on these shares were due on July 1 and January 1 each year.

A COMMITTEE has been appointed by the Board of Trade to consider the recommendations in the second report of the National Fuel and Power Committee on the subject of the extension of facilities to gas companies for obtaining capital, extensions, amalgamations, etc. The members are: Mr. F. J. Wrottesley, K.C. (chairman), Mr. Jacques Abady, Mr. John Baker, M.P., Mr. R. W. Edwards, Sir William Hart, Mr. A. Hayday, M.P., Mr. T. P. Ridley, Mr. J. F. Ronca, Mr. A. N. C. Shelley, Mr. A. W. Smith, Mr. W. Thorne, M.P., and Sir David Milne-Watson; with Mr. Durban Haigh as secretary.

Obituary

MR. LEWIS E. HOPKINS, of 6, Alexandra Street, Brynmill, Swansea, for forty years analytical chemist with Baldwins and Co., Ltd., Landore, aged 70.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

339,936. LACQUERS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 8, 1929.

Azo dyestuffs containing sulphonic groups are obtained by coupling diazotised nitro-arylamines with sulphonic acids of acetoacetic acid arylides, and the alkaline earth metal salts of these are used for colouring lacquers made from cellulose derivatives, *e.g.*, nitro cellulose. In an example, a paste containing the calcium salt of the dyestuff 5-nitro-2-amino benzoic acid—the sulphonic acid of acetoacetic acid 2-anisidide and diethyl phthalate, is added to a solution of nitrocel lulose in a mixture of the monoethyl ether of ethylene glycol, acetone, ethyl alcohol and butyl alcohol. The preparation of acetoacetic acid 2-anisidide sulphonic acid is described.

339,937. SYNTHETIC DRUGS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 14, 1929.

Alkyl-phenyl-malonic or cyanacetic esters or their derivatives such as esters, amides, amide-acid esters, chlorides and nitriles are treated with N-methyl or ethyl-urea or its derivatives such as N-methyl or ethyl-thioureas, -guanidines and -iso thiourea-ethers. Alternatively, C-phenyl- or C : C-alkyl-phenyl-barbituric acids are methylated or ethylated, or an N-methyl or ethyl-C phenyl-barbituric acid is alkylated, or a derivative of the acid may be alkylated and then converted into the desired acid. In each case the products are N-methyl or ethyl-C : C-alkyl-phenyl-barbituric acids, and these and also their salts have therapeutic properties.

339,954. DYES. C. Shaw, R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth. Application date, June 11, 1929.

Bzl : Bzl[1]-dibenzanthronyl or its tetra-chlor or tetrabrom derivatives are treated with a dichromate in sulphuric acid, and the products subjected to alkali fusion in the presence or absence of an alcohol, phenol or other diluent. The products are vat dyes which give blue-grey to black shades.

339,958. ESTER CONDENSATION PRODUCTS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 12, 1929.

The hydroxyl groups of aliphatic long chain carboxylic acids containing hydroxyl groups in the chain, or esters of such acids with alcohols, are esterified by heating with colophony or other natural resin acid until the acid value of the resin acid has practically disappeared. The reaction may be effected *in vacuo*, or an inert gas may be passed through to remove the water as formed. The products are acid-free viscous oily substances suitable as softening agents for celluloid, condensation products of formaldehyde with urea or phenols, or casein. Examples are given of the treatment of castor oil with colophony, ricinoleic acid with colophony, and dihydroxy-stearic ethyl ester with abietic acid.

339,962. PARAFFIN DERIVATIVES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort on-Main, Germany. Application date, September 11, 1929.

Halogenated paraffins containing more than eight carbon atoms are treated with aqueous or alcoholic ammonia, ammonium carbonate or urea, in the presence of copper or copper compounds as catalysts. The halogen atoms are partly replaced by amino groups and partly split off with formation of double bonds and partly remain in the molecule. If alcoholic solutions are employed, the alcohol may form ether groups. Secondary reactions may also occur. Examples are given of the treatment with a solution of ammonia in ethanol or methanol of dichlorinated hard paraffin, a di- or tetra-chlorinated easily fusible paraffin, a hexachlorinated hard paraffin, and an octa-chlorinated hard paraffin. Copper sulphate may be used as a catalyst.

339,963. DISTILLING SHALE. F. Esling, The Laboratories, Wandsworth Plain, London. Application date, September 12, 1929.

Bituminous shale, cannel coal, torbanite, etc., are mixed with petroleum or its derivatives and distilled at ordinary, reduced or slightly increased pressure to obtain a distillate of low sulphur content, and a pitch-like residue.

339,969. FERTILISERS. Odda Smelteverk Aktieselskabet and E. Johnson, Odda, Norway. International Convention date, November 24, 1928. Addition to 339,340.

Phosphate rock is dissolved in nitric acid and calcium nitrate is crystallised. The mother liquor is treated with ammonia, urea, calcium cyanamide, mineral phosphates, compounds of ammonia and carbon dioxide, or alkali carbonates. Water is then removed and a dry stable fertiliser is obtained. Other compounds such as potassium or ammonium sulphate, nitrate, chloride or phosphate, urea, or urea salts may be added in the solid, dissolved or molten state. The mother liquor may be freed from lime before neutralisation by precipitation with sulphuric acid or sulphates. The apparatus may be constructed of, or lined with, ebonite or a composition consisting of asbestos and "Bakelite."

340,004. POLYMERISING UNSATURATED COMPOUNDS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 12, 1929.

Fatty acids such as acrylic, linoleic, ricinoleic, and other long chain acids, or derivatives such as esters or mixtures such as crude linseed oil, unsaturated aliphatic hydrocarbons with more than one double linkage such as butadiene, isoprene, etc., or unsaturated aromatic compounds such as styrene, are polymerised in the presence of carbonyls of iron, nickel, cobalt, molybdenum, tungsten or chromium, in the proportion of 0·1–10 per cent., and with warming. Organic solvents may be present, such as aromatic hydrocarbons or petroleum fractions, esters or ketones, carbon tetrachloride, etc. Polymerisation of partly polymerised diolefines is effected in the presence of oxygen, polynuclear aromatic sulphonic acids, etc. In an example, linseed oil is heated with iron or cobalt carbonyl to 300° C., while passing carbon dioxide to obtain viscous or solid products. The process is used in the manufacture of coatings, films, threads, etc.

340,008. SYNTHETIC RUBBER. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 19, 1929.

In polymerising diolefines by means of alkali or alkaline earth metals, an organic compound containing a carbon atom with at least two valencies satisfied by oxygen is also added, *e.g.*, saturated and unsaturated acyclic or cyclic acetals, *e.g.*, dibutyl acetal, ethylene acetal, or other acetals from 1 : 2 and 1 : 3-glycols with aldehydes, unsaturated acetals such as those from crotonaldehyde or acrolein and butylene glycol. Several other classes of compounds which are also suitable are specified. If the organic compound reacts with the metal, an excess of the latter is used, unless the product is itself a polymerising agent. The polymerisation products may be tough, or soft and plastic, according to the conditions employed. Examples are given of the use of a dibutyl aceta, etlhylene acetal, the acetal from crotonaldehyde and 1 : 3-butylene glycol, the acetal from acrolein and 1 : 3-butylene-glycol, acetophenone, benzophenone, crotonaldehyde, stearic acid and vinyl ethyl ether, phthalic diethyl ester,ethyl orthoformic ester, and oleic acid.

340,009. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 19, 1929.

Azo dyes of the tartrazine series are obtained by selecting the components so that the product is substituted in the 1- and 4-positions of the pyrazolone ring by a phenyl and a phenylazo radicle respectively which each contain two sulpho groups, and such that of the four sulpho groups one pair occupies the 5′- and 5″- positions while the other pair occupies

either the 2'- and 2''- or the 3'- and 3''-positions, or if each of the phenyl radicles carries a methyl group in the 2'- and 2''-positions, the second pair of sulpho groups occupies the 4'- and 4''-positions. Sodium dihydroxy-tartrate 1 mol. may be condensed with a phenyl- or tolyl-hydrazine-5-sulphonic acid as above, 2 mols., or alternatively, oxalacetic ester is condensed with a phenyl- or *o*-tolyl-disulphonic acid to obtain a pyrazolone which is then coupled with the corresponding phenyl- or *o*-tolyl-diazonium compound containing two sulphonic groups. The products give greenish-yellow shades, suitable for printing on paper. A number of examples are given.

340,016. DESULPHURIZING GASES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 16, 1929.

Coal gas, coke-oven gas, cracking and distillation gases are treated with catalysts consisting of sulphides of elements of groups 2—7, preferably group 6, together with metals of group 8 or heavy metals of group 1 or their compounds, at temperatures of 200°–400° C. The sulphur compounds are converted into hydrogen sulphide.

Specifications Accepted with Date of Application

316,321 and 316,323. Coating compositions, particularly those containing cellulose acetate. Imperial Chemical Industries, Ltd. July 27, 1928.

316,322. Resin-like materials, Preparation of. Imperial Chemical Industries, Ltd. July 27, 1928.

316,324. Esters of dibasic acids, particularly esters of polyhydroxy compounds containing at least two free hydroxyl groups. Imperial Chemical Industries, Ltd. July 27, 1928.

316,684. Concentration of nitric acid. Imperial Chemical Industries, Ltd. August 2, 1928.

317,399. Pyrometallurgical copper refining. H. H. Stout. August 15, 1928.

342,659. Spongy iron, Production of. F. Krupp Akt.-Ges. Friedrich Alfred-Hutte. November 6, 1928. Addition to 340,641.

342,667 and 342,706. Dyestuffs of the anthraquinone series, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) September 30, 1929.

342,668. Combustible solid poly-formaldehyde, Preparation of. W. Schilt. October 3, 1929.

342,690. Stable acridine salt solutions, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) November 1, 1929.

342,670. Refining of fatty acids obtained by the oxidation of paraffin wax or other high molecular organic compounds. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) October 23, 1929.

342,703. Sodium cyanide, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) November 4, 1929.

342,729. Aluminium alloy. H. C. Hall and T. F. Bradbury. November 6, 1929. Addition to 323,353.

342,738. Cellulose esters and cellulose ester products therefrom, Manufacture of. H. Dreyfus. August 2, 1929. 342,739 addition to 312,098, and 342,740 addition to 309,201.

342,741. Distillation processes, Apparatus for carrying out. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) August 9, 1929.

342,761. Sulpho derivatives of higher fatty acids, Manufacture of. I.G. Farbenindustrie Akt.-Ges. November 6, 1928.

342,771. Acetylene, Production of. J. Ferguson, and Imperial Chemical Industries, Ltd. November 8, 1929.

342,775. Regenerating zinc chloride lyes containing calcium chloride. I.G.Farbenindustrie Akt.-Ges. November 9, 1928.

342,807. Acid disazo dyestuffs, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) November 19, 1929.

342,834. Mineral oils and mineral fats, Refinement of. Compagnie Provencale de Raffinage de Corps Gras Mineraux. July 27, 1929.

342,840. Extraction of oils from solid residues obtained in the destructive hydrogenation of coal and the like. K. Gordon, H. Harper, W. I. Jones, and Imperial Chemical Industries, Ltd. December 18, 1929.

342,854. Catalytic gaseous reactions, Process and apparatus for. J. L. Brill. December 31, 1928.

342,868. Sulphur-resisting alloys. Heraeus Vacuumschmelze Akt.-Ges. and W. Rohn. January 13, 1930.

342,921. Continuous distillation apparatus for the refining of oils and fats, and for like purposes. Birmingham Aluminium Casting (1903) Co., Ltd., P. Pritchard and G. W. Lacey. February 25, 1930.

342,931. Fertilizers, Manufacture of. Soc. d'Etudes Scientifiques et d'Entreprises Industrielles. March 9, 1929.

342,942. Crystallization of salts. Akt.-Ges. der Maschinen-Fabriken Escher, Wyss, et Cie. March 21, 1929.

342,982. Magnetic alloys. International General Electric Co. Inc. May 25, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Boehringer and Soehne Ges., C. F. and Ellis, G. B. Separation of acetic anhydride and acetic acid. 4,966. February 17.

Boot's Pure Drug Co., Ltd. and Marshall, J. Production of formaldehyde condensation products. 5,523. February 21.

Burman, A. S. Production of chemical compounds or metals from raw materials. 4,872 February 16. (Sweden, February 17, 1930.)

Burns, R. Manufacture of propellant explosives. 4917. February 16.

Carbide and Carbon Chemicals Corporation. Manufacture of 1, 4, dioxane. 5,402. February 20. (United States, February 20, 1930.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of hydroxy-thionaphthenes, etc. 4,962. February 17.

—— Manufacture of basic dyestuffs. 5,032. February 17.

—— Manufacture of vat dyestuffs. 5,161. February 18.

Collett, E. Production of fertilisers in granular form. 4,992. February 17.

Du Pont de Nemours and Co., E.I., and Imperial Chemical Industries, Ltd. Manufacture of synthetic resins. 5,249. February 19.

Guillissen, J., and Union Chimique Belge Soc. Anon. Manufacture of lithopone. 5,253. February 19.

Hermann, S. and Pharmazeutische Werke Norgine Akt.-Ges. Preparation of organic derivatives of bromine. 4,820. February 16. (Austria, May 10, 1930.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of hydroxy-thionaphthenes, etc. 4,962. February 17.

—— Manufacture of basic dyestuffs. 5,032. February 17.

—— Manufacture of vat dyestuffs. 5,161. February 18.

—— Anti-halation layers for photographic plates and films. 5,008. February 17. (Germany, February 17, 1930.)

—— Manufacture of acid wool dyestuffs of the anthraquinone series. 5,451. February 20. (Germany, February 25, 1930.)

—— Manufacture of salts of acylamino-phenol-arsenic acids. 5,531. February 21.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Rendering building materials water proof. 5,142. February 18.

—— Production of alkali metal cyanates. 5,143. February 18.

—— Production of ammonium cyanate. 5,144. February 18.

Ilford, Ltd. and Kendall, J. D. Manufacture of dyes. 5,194. February 18.

Imperial Chemical Industries, Ltd. Manufacture of propellant explosives. 4,917. February 16.

—— Compression release device for internal-combustion engines. 5,128. February 18.

—— Fuseheads for electrical firing. 5,176. February 18.

—— Delay-action electric detonators. 5,311. February 19.

Jacmart, M., Le Bris, G., and Pellereau, L. Preparation of titanium oxide, etc. 5,541. February 21. (France, February 21, 1930.)

Kane, T., and Strange, E. H. Hydrolysis of alkyl chlorides or bromides. 5,275. February 19.

—— Manufacture of alkyl chlorides and bromides from olefines, etc. 5,276. February 19.

Mentzel, A. Manufacture of ammonia. 4,876. February 16.

Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. Pyrolysis of propylene. 5,515. February 21. (United States, February 24, 1930.)

Rennerfelt, I. Production of chemical compounds or metals from raw materials. 4,872. February 16. (Sweden, February 17, 1930.)

Ruhrechemie Akt.-Ges. Production of organic substances. 5,069. February 17. (Germany, February 17, 1930.)

Ruth-Aldo Co., Inc. Cellulose acetate, and process of manufacturing same. 5,307. February 19.

Silica Gel Corporation. Refining low boiling-point hydrocarbons 5,155. February 18. (United States, February 19, 1930.)

Soc. of Chemical Industry in Basle. Manufacture of derivatives of oxy-fatty-acids. 4,852. February 16. (Switzerland, March 25, 1930.)

—— Manufacture of cellulose derivatives. 5,417. February 20. (Switzerland, February 21, 1930.)

Standard I.G. Co. Hydrogenation of hydrocarbon oils. 5,419. February 20. (United States, March 13, 1930.)

Twiss, D. F., and Dunlop Rubber Co., Ltd. Preservation of aqueous dispersions of rubber, etc. 5,236. February 19.

—— Manufacture of rubber compositions. 5,369. February 20.

Ungar, R. M. Manufacture of rubber. 5,409. February 20.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.
ACID CHROMIC.—1s. per lb., less 2½% d/d U.K.
ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.
ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.
AMMONIUM BICHROMATE.—8½d. per lb. d/d U.K.
BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.
BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags. carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards).
CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.
CHROMIUM OXIDE.—9d. to 9½d. per lb. according to quantity d/d U.K.
CHROMETAN.—Crystals, 3¼d. per lb. Liquor, £18 12s. 6d. per ton d/d U.K.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 7d. to 1s. 11d. per gall.; pyridinised industrial, 1s. 9d. to 2s. 1d. per gall.; mineralised, 2s. 8d. to 2s. 11d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4¼d. per lb. nett d/d U.K., discount according to quantity; ground ½d. per lb. extra.
POTASSIUM CHLORATE.—3¼d. per lb., ex-wharf, London, in cwt. kegs.
POTASSIUM CHROMATE.—8½d. per lb. d/d U.K.
SALAMMONIAC.—Firsts lump, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.
SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
SODA CAUSTIC, SOLID, 76/77%.—Spot, £14 10s. per ton, d/d station.
SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
SODIUM BICHROMATE CRYSTALS (CAKE AND POWDER)—3¼d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.
SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.
SODIUM CHLORATE.—2¾d. per lb.
SODIUM CHROMATE.—3¾d. per lb. d/d U.K.
SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
SODIUM PHOSPHATE.—£14 10s. per ton, f.o.r. London, casks free.
SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.
SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton d/d station in drums. Crystals—Spot, £7 10s. per ton d/d station in returnable casks.
SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5d. to 6¼d. per lb. Crude 60's 1s. to 1s. 1d. per gall. August/December.
ACID CRESYLIC 99/100.—1s. 9d. to 1s. 10d. per gall. B.P., 3s. 6d. per gall. 97/99.—Refined, 2s. 2d. to 2s. 3d. per gall. Pale, 98%, 1s. 8d. to 1s. 9d. Dark, 1s. 4d. to 1s. 4½d.
ANTHRACENE OIL, STRAINED (GREEN OIL).—4½d. to 4¾d. per gall.
BENZOLE.—Prices at works: Crude, 7½d. to 8½d. per gall.; Standard Motor, 1s. 3d. to 1s. 4d. per gall.; 90%, 1s. 4½d. to 1s. 5½d. per gall.; Pure, 1s. 7½d. to 1s. 8½d. per gall. (The above prices were operative from October 21 last).
TOLUOLE.—90%, 1s. 8d. to 1s. 9d. per gall. Pure, 1s. 10d. to 1s. 11d. per gall.
XYLOL.—1s. 8d. to 1s. 9d. per gall. Pure, about 1s. 11d. per gall.
CREOSOTE.—Standard specification, for Export, 5½d. per gall. f.o.b.; for Home, 4d. per gall. d/d.
NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent, 90/190, 1s. to 1s. 2d. per gall.
NAPHTHALENE.—Purified Crystals, £11 11s. per ton.
PITCH.—Medium soft, 45s. per ton, in bulk at makers' works.
PYRIDINE.—90/140, 3s. 6d. to 3s. 9d. per gall 90/160, 3s. 3d. to 3s. 6d. per gall. 90/180, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100%.
ACID GAMMA.—Spot, 3s. 6d. per lb. 100% d/d buyer's works.
ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.
ACID NEVILLE AND WINTHER.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.
ACID SULPHANILIC.—Spot, 8¼d. per lb. 100% d/d buyer's works.
ANILINE OIL.—Spot, 8¼d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8¼d. per lb. d/d buyer's works, casks free.
BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.
BENZIDINE BASE.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.
BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.
o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.
m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.
p-CRESOL 34·5° C.—1s. 9d. per lb., in ton lots.
DICHLORANILINE.—2s. 5d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra d/d buyer's works.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE.—£74 per ton d/d.
DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7¾d. per lb.
DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
a-NAPHTHOL.—Spot, 1s. 11d. per lb. d/d buyer's works.
B-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.
a-NAPHTHYLAMINE.—Spot, 1s. per lb. d/d buyer's works.
B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.
o-NITRANILINE.—5s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 6½d. per lb., 5-cwt. lots, drums extra, d/d buyer's works.
NITRONAPHTHALENE.—9d. per lb.
R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.
SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.
o-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.
p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.
m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 10s. per ton. Grey, £12 to £12 10s. per ton. Liquor, 9d. per gall.
ACETONE.—£60 to £62 10s. per ton.
CHARCOAL.—£6 to £9 per ton, according to grade and locality.
IRON LIQUOR.—10d. to 1s. 4d. per gall.
RED LIQUOR.—9d. per gall.
WOOD CREOSOTE.—1s. 9d. per gall., unrefined.
WOOD NAPHTHA, MISCIBLE.—2s. 11d. per gall. Solvent, 3s. 9d. to 4s. per gall.
WOOD TAR.—£4 to £5 per ton.
BROWN SUGAR OF LEAD.—£37 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 2d. per lb. according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—1s. 7d. to 1s. 9d. per lb.
BARYTES.—£6 to £7 10s. per ton, according to quality.
CADMIUM SULPHIDE.—4s. 6d. to 5s. per lb.
CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.
CARBON BLACK.—3¼d. to 4 1/16d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity. drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 6d. per lb.
INDIARUBBER SUBSTITUTES, WHITE.—4 5/8d. to 5 1/8d. per lb.; Dark, 4 1/8d. to 4 7/8d. per lb.
LAMP BLACK.—£28 per ton, barrels free.
LITHOPONE, 30%.—£19 to £21 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.

VERMILION, PALE OR DEEP.—6s. 6d.–7s. per lb.
ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACETANILIDE.—1s. 4d. per lb. for 1-cwt. lots.
ACID, ACETIC, PURE, 80%.—£37 5s. per ton d/d address U.K. in casks.
ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb., according to quantity.
ACID, BENZOIC B.P.—1s. 9d. to 1s. 10d. per lb., for synthetic product. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.
ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. to 1s. 1d. per lb., less 5%.
ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.
ACID, MOLYBDIC.—5s. 3d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 0½d. per lb., less 5%.
AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.
AMMONIUM BENZOATE.—3s. 9d. per lb.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.
AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.
ARGENT. NITRAS, CRYSTALS.—1s. 1d. per oz.
ATROPHINE SULPHATE.—8s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BISMUTH CARBONATE.—8s. per lb
BISMUTH CITRATE.—7s. 6d. per lb.
BISMUTH SALICYLATE.—7s. 3d. per lb.
BISMUTH SUBNITRATE.—6s. 6d. per lb.
BISMUTH NITRATE.—Cryst. 5s. per lb.
BISMUTH OXIDE.—9s. 10d. per lb.
BISMUTH SUBCHLORIDE.—9s. 7d. per lb.
BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb. Liquor Bismuth B.P., in W. Qts., 1s. 2d. per lb.; 6 W. Qts., 11½d. per lb.; 12 W. Qts., 10d. per lb.; 36 W. Qts., 9½d. per lb.
BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 4½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 7d. per lb. Prices for 1-cwt. lots.
CAFFEIN, PURE.—6s. 6d. per lb.
CAFFEIN CITRAS.—5s. per lb.
CALCIUM LACTATE.—B.P., 1s. to 1s. 6d. per lb., according to quantity.
CAMPHOR.—Refined flowers, 2s. 10d. to 3s. per lb., according to quantity; also special contract prices.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
EMETINE HYDROCHLORIDE.—58s. 6d. per oz.
EMETINE BISMUTH IODIDE.—33s. per oz.
EPHEDRINE, PURE.—12s. 6d. to 13s. 6d. per oz.
EPHEDRINE HYDROCHLORIDE.—9s 9d. to 10s. 6d. per oz
EPHEDRINE SULPHATE.—9s. 9d. to 10s. 6d. per oz.
ERGOSTEROL.—2s. 6d. per gm.
ETHERS.—S.G. ·730—1s. to 1s. 1d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—27s. 6d. per oz.
HYDRASTINE HYDROCHLORIDE.—90s. per oz. for small quantities.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; fo r28-lb. lots.
IRON AMMONIUM CITRATE.—B.P., 1s. 11d. per lb., for 28-lb. lots. Green, 2s. 6d. per lb., list price. U.S.P., 2s. 9d. per lb. list price.
IRON PERCHLORIDE.—18s. to 20s. per cwt. according to quantity.
IRON QUININE CITRATE.—B.P., 8½d. to 8¾d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light B.P., 36s. per cwt.
MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 14s. per lb. net; Synthetic, 8s. 6d. to 12s. per lb.; Synthetic detached crystals, 8s. 6d. to 10s. per lb., according to quantity; Liquid (95%), 9s. per lb.
MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 5d per lb.
PARAFORMALDEHYDE.—1s. 8d. per lb.
PARALDEHYDE.—1s. 1d. per lb.
PHENACETIN.—3s. 9d. to 4s. 1d. per lb.
PHENOLPHTHALEIN.—5s. to 5s. 2½d. per lb.
PILOCARPINE NITRATE.—10s. 6d. per oz.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—83s. 6d. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P., 1s. 9d. per lb. for 28-lb. lots.
POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.
POTASSIUM IODIDE.—16s. 8d. to 17s. 9d. per lb., as to quantity.
POTASSIUM METABISULPHITE.—30s. per cwt. d/d London, kegs free.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. per oz. for 1,000-oz. lots.
QUINOPHAN.—B.P.C., 14s. 6d. to 16s. 6d. per lb. for cwt. lots.
SACCHARIN.—43s. 6d. per lb.
SALICIN.—18s. 6d. per lb.
SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.
SODIUM BENZOATE B.P.—1s. 5d. per lb. for 1-cwt. lots.
SODIUM CITRATE.—B.P.C. 1911, 1s. 6d. per lb. B.P.C. 1923, and U.S.P., 1s. 10d. per lb. for 28-lb. lots.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—85s. per cwt. net, ton lots, d/s of 5 cwt. Crystals, 2s. 6d. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.
STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.
TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.
THYMOL.—Puriss, 6s. 6d. to 7s. 6d. per lb., according to quantity. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—9s. per lb.
AMYL ACETATE.—2s. 3d. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL CINNAMIC ALDEHYDE.—9s. per lb.
AMYL SALICYLATE.—2s. 6d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 9d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 9d. per lb.
BENZYL BENZOATE.—2s. 4d. per lb.
CINNAMIC ALDEHYDE NATURAL.—11s. 9d. per lb.
COUMARIN.—12s. per lb.
CITRONELLOL.—6s. 6d. per lb.
CITRAL.—6s. 6d. per lb.
ETHYL CINNAMATE.—6s. 9d. per lb.
ETHYL PHTHALATE.—2s. 6d. per lb.
EUGENOL.—8s. 9d. per lb.
GERANIOL.—6s. to 10s. per lb.
HELIOTROPINE.—5s. 9d. per lb.
PHENYL ETHYL ACETATE.—10s. per lb.
PHENYL ETHYL ALCOHOL.—8s. 6d. per lb.
RHODINOL.—38s. 6d. per lb.
SAFROL—1s. 3d. per lb.

Prices of Essential Oils

ANISE OIL.—3s. 3d. per lb.
BERGAMOT OIL.—9s. per lb.
BOURBON GERANIUM OIL.—13s. 6d. per lb.
CAMPHOR OIL.—White, 1s. 9d. per lb.; Brown, 1s. 3d. per lb.
CANANGA.—Java, 8s. 3d. per lb.
CASSIA OIL, 80/85%.—4s. 3d. per lb.
CINNAMON OIL LEAF.—5s. per oz.
CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. Pure Ceylon, 2s. 1b.
CLOVE OIL, 90/92%.—7s. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%—1s. 6d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, 9s. per lb.
LEMON OIL.—4s. per lb.
LEMONGRASS OIL.—3s. per lb.
PALMA ROSA OIL.—10s. per lb.
PEPPERMINT OIL.—English, Mitcham, 65s. per lb.; Japanese, 4s. 6d. per lb; Wayne County, 9s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co. Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, February 26, 1931.

BUSINESS is a little more active, with prices on the whole steady. Export business is also steady.

General Chemicals

ACETONE.—Business is satisfactory and price continues unchanged at about £60/65 per ton, according to quantity.

ACID ACETIC.—Firm at £36 5s. to £38 5s. for technical 80%, with pure 80% at £37 5s. to £39 5s. per ton and in quite active demand.

ACID CITRIC.—Price still continues easy at about 1s. 1¼d. to 1s. 1¾d. per lb., less 5%.

ACID FORMIC.—In steady request at £38 per ton for 85% technical.

ACID LACTIC.—Continues firm at £41 to £42 per ton for the 50% by weight, pale quality.

ACID OXALIC.—Firm at £30 7s. 6d. to £32 per ton, according to quantity, with a good steady demand.

ACID TARTARIC.—1s. 0¼d. per lb., less 5%, and rather slow.

ALUMINA SULPHATE.—£7 15s. to £8 5s. per ton for the 17/18% iron free quality.

ARSENIC.—Continues firm at £19 to £19 10s. per ton.

CREAM OF TARTAR.—A little easier at 86s. per cwt., ex warehouse, London, with a fair demand.

COPPER SULPHATE.—The improved demand continues at £22 to £22 10s. per ton, less 5%, free on rails London.

FORMALDEHYDE.—In good request at £30 to £30 10s. per ton.

LEAD ACETATE.—£34 5s. per ton, and in fair demand, with brown at £1 per ton less.

LEAD NITRATE.—Unchanged at about £29 10s. per ton. somewhat quiet.

LITHOPONE.—Continues steady at £18 to £22 per ton, according to grade and quantity, and in steady demand.

POTASH BICHROMATE.—4¼d. per lb., with usual discounts for quantities.

POTASH CHLORATE.—Firm at £28 to £30 per ton, and in fairly active demand.

PERMANGANATE OF POTASH.—Firm at 5¼d. per lb., with a good demand.

PRUSSIATE OF POTASH.—£63 10s. to £65 10s. per ton, according to quality with a good steady demand.

SODIUM BICHROMATE.—3½d. per lb., with usual discounts for contracts.

SODA CHLORATE.—Continues very firm at £26 10s. per ton, and in good demand.

SODIUM HYPOSULPHITE.—Commercial, £8 10s. per ton; photographic crystals, £14 5s. per ton, with an improved demand.

SODA YELLOW PRUSSIATE.—Firm at 4¾d. to 5½d. per lb., according to quantity, with an improved demand.

TARTAR EMETIC.—Quiet at about 11d. per lb.

ZINC SULPHATE.—Unchanged at £11 to £11 10s. per ton.

Coal Tar Products

There is no change to report in the Coal Tar Products market, and prices are unaltered from last week.

MOTOR BENZOL.—Quoted at about 1s. 5½d. to 1s. 6½d. per gallon, f.o.r.

SOLVENT NAPHTHA.—Remains at about 1s. 2½d. to 1s. 3d. per gallon.

HEAVY NAPHTHA.—Unchanged at about 1s. 1d. per gallon, f.o.r.

CREOSOTE OIL.—Worth about 3d. to 3½d. per gallon, f.o.r., in the North, and 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Quoted at about 1s. 8d. per gallon for the 98/100% quality, and at about 1s. 6d. per gallon for the dark quality 95/97%.

NAPHTHALENES.—Remain at £3 10s. to £3 15s. per ton for the firelighter quality, at about £4 to £4 5s. per ton for the 74/76 quality, and at about £5 per ton for the 76/78 quality.

PITCH.—Obtaining 37s. 6d. to 42s. 6d. per ton, f.o.b. East Coast port.

THE following additional prices have been received :—

Carbolic Acid.—No change; 5-ton lots at 5½d., druggists' quantities at 6¼d. per lb., in bulk packages.

Aspirin.—2s. 7d. to 2s. 9d. per lb.

Salicylic Acid B.P.—1s. 5d. to 1s. 8d. per lb.

Vanillin.—Steady, clove oil material offered at 14s. per lb. for 1-cwt. lots.

Methyl Salicylate.—1s. 3d. to 1s. 5d. per lb.

Phenolphthalein.—5s. to 5s. 2½d. per lb.

Nitrogen Fertilisers

Sulphate of Ammonia.—Export.—During the week there has been a moderate demand for prompt shipment and the price remains steady at about £7 per ton f.o.b. U.K. port, in single bags, for neutral quality, 20·6 per cent. nitrogen. *Home.*—It is expected that the home demand will not be so great this year as in the past, but merchants in several parts of the country are commencing to purchase part of their requirements.

Nitrate of Soda.—Stocks are still heavy in most of the consuming markets, and spring deliveries have not yet commenced. The price scale remains in operation.

Latest Oil Prices

LONDON, February 25.—LINSEED OIL was barely steady at 5s. to 2s. 6d. per ton advance. Spot was 10s. higher at £20 10s., ex mill; March, £18 15s.; April, £18 17s. 6d.; May-August, £19 15s.; and September-December, £20 5s., naked. RAPE OIL was firm and 10s. higher. Crude extracted, £29 10s.; technical refined, £31, naked, ex wharf. COTTON OIL was firm, unchanged. Egyptian crude, £18 10s.; refined common edible, £22 10s.; and deodorised, £24 10s., naked, ex mill. TURPENTINE was firm and 6d. per cwt. higher. American, spot, 37s. 6d.; March-April, 37s. 9d.; Russian, spot, 34s. 9d.

HULL.—LINSEED OIL, naked, spot to April, closed at £19 5s.; May-August, £19 7s. 6d.; September-December, £19 15s.; Baltic, spot, unquoted. COTTON OIL, naked, Egyptian, crude, spot, £19 5s.; edible, refined, spot, £21 10s.; technical, spot, £21 5s.; deodorised, £23 10s. CASTOR OIL, spot, 39s. 6d.; firsts, 34s. 6d.; seconds, 32s. 6d. PALM KERNEL OIL, crude, naked, 5½ per cent., spot, £23. GROUNDNUT OIL, crushed/extracted, spot, £23 10s.; deodorised, £27 10s. SOYA OIL, crushed/extracted, spot, £19 10s.; deodorised, £23. RAPE OIL, crushed/extracted, spot, £29 10s.; refined, spot, £31 10s., per ton. COD OIL, 19s. per cwt. TURPENTINE firm at 39s. 6d. per cwt.

South Wales By-Products

THE slight improvement in South Wales by-product activities is being maintained, but business generally is still far from satisfactory. Pitch has a fluctuating demand, but there are indications that big users, especially the patent fuel manufacturers, are coming back into the market. Values are unchanged. Road tar has a fair call with quotations steady round the 13s. per 40-gallon barrel mark. Refined tars have a steady call, with quotations unchanged for coke-oven and gasworks tar. Solvent naphtha is slow, while heavy has practically no demand. Patent fuel and coke prices are unchanged, patent fuel quotations for export being :—21s. to 21s. 6d., ex-ship, Cardiff; 20s., ex-ship Swansea and Newport. Coke prices are :—Best foundry, 34s. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; furnace, 17s. 6d. to 18s.

Scottish Coal Tar Products

VERY little change in market conditions can be reported, there being a scarcity of orders with plentiful supplies of most products in stock. Cresylic acid values have decreased, but creosote continues fairly steady.

Cresylic Acid.—Values are slightly lower as follows :—Pale, 99/100%, 1s. 6d. to 1s. 7d. per gallon; pale, 97/99%, 1s. 5d. to 1s. 6d. per gallon; dark, 97/99%, 1s. 4d. to 1s. 5d. per gallon; all f.o.r. naked. High boiling is unchanged at 1s. 7d. to 1s. 9d. per gallon.

Carbolic Sixties.—Value is nominal at about 1s. 6d. per gallon for "low water content" qualities.

Creosote Oil.—While little business is being transacted values are well maintained. Specification oil, 2½d. to 2⅝d. per gallon; gas works ordinary, 3¼d. to 3⅜d. per gallon; washed oil, 3d. to 3¼d. per gallon; all in bulk f.o.r.

Coal Tar Pitch.—Dull with nominal values at 40s. to 42s. 6d. per ton f.a.s. Glasgow for export and round 42s. 6d. per ton, ex works, for home trade.

Blast Furnace Pitch.—Only in small request with controlled prices unchanged at 30s. per ton f.o.r. works for home trade, and 35s. per ton, f.a.s. Glasgow for export.

Refined Coal Tar.—The demand is increasing, but prices remain easy at 2¾d. to 3d. per gallon, f.o.r. makers' works.

Blast Furnace Tar.—Quiet at 2¾d. per gallon, f.o.r.

Crude Naphtha.—Steady with quotations not lower than 4¼d. to 4½d. per gallon in bulk.

Water White Products.—Very few orders are being placed. Motor benzol is 1s. 3¾d. to 1s. 4d. per gallon; 90/160 solvent, 1s. 2½d. to 1s. 3½d. per gallon; 90/190 heavy solvent, 1s. 0¼d. to 1s. 1d. per gallon; all in bulk, f.o.r. works.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, February 24, 1931.

THE Scottish heavy chemical market continues brisk and generally enquiries are steady.

Industrial Chemicals

ACETONE.—B.G.S.—£60 to £63 per ton, ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £22 per ton; crystals, £23; B.P. crystals, £31 per ton; B.P. powder, £32 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at the same price, viz.: 3¼d. per lb., ex store. On offer from the Continent at 3½d. per lb., ex wharf.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 11½d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 10s. od. per ton., c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—10¼d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material obtainable at round about £28 per ton, ex wharf. On offer for shipment from China at about £27 per ton, c.i.f. U.K.

ARSENIC, WHITE POWDERED.—Quoted £22 10s. per ton, ex wharf. Spot material still on offer at £22 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £9 10s. per ton, c.i.f. U.K. ports. For Continental materials our price would be £8 10s. per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £4 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £33 per ton, ex store. Continental on offer at about £32 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £34 per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £46 per ton, carriage paid.

LEAD, ACETATE.—White crystals quoted round about £38 to £39 per ton ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE.—GROUND CALCINED.—Quoted £9 7s. 6d. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p. quoted 1s. 8d. per gallon less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4¼d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £25 10s. per ton ex store. Offered from the Continent at £24 15s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £25 per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb. ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb. ex wharf.

SODA CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums, all carriage paid buyer's station, minimum four-ton lots. For contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¾d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Chilean producers now offer at £10 per ton, carriage paid, buyer's sidings, minimum six-ton lots.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 60s. per ton, ex works; 65s. per ton, delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £9 per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £19 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

How Americans Advertise

FORESEEING an even greater gain in 1931 than in 1930, when sales increased 48 per cent., the Ethyl Gasoline Corporation, owned jointly by General Motors Corporation and the Standard Oil Co. of New Jersey, U.S.A., announces an increase of 30 per cent. in its advertising budget for the current year. About $12,000,000 was devoted last year to advertising ethyl gasoline. Of this sum, believed to be the largest expended in advertising any single product in the world, approximately $10,200,000 was spent by refiner licensees marketing ethyl petrol, and the remainder by the Ethyl Gasoline Corporation.

The expenditures by refiners were disclosed through a survey just completed by the Corporation. The total report by forty-seven refiners is about $7,000,000. of which nearly 50 per cent. goes to newspapers.

Although these refiners represent only 50 per cent. of the total number of licensees, the total volume sale of Ethyl petrol by this group represents more than 70 per cent. of all Ethyl petrol sold. It is held, therefore, that this represents sufficient volume to give a true picture of all licensees.

An analysis of the distribution among various media is based upon a total of $6,284,732, the lower figure being used because a few of the refiners could not allocate their advertising costs with exactness.

Billboards rank next to newspapers with $1,725,502, or 27·5 per cent. Expenditures in other classifications follow:

Station signs, $622,554, or 9·8 per cent.; radio, $320,387, or 5·2 per cent.; direct mail, $143,841, or 2·3 per cent.; trade papers, $127,401, or 2 per cent.; farm papers, $52,478, or ·8 per cent.; miscellaneous, $273,265, or 4·3 per cent.

The total average expenditure by refiners is slightly more than one-half cent a gallon. The range of per gallon expenditure was from one-tenth of a cent to over three cents. The range of total expenditure was from $2,000 to $924,000.

Using the average per gallon expenditure of those reporting as a basis for computing a grand total estimate, the following figures result: Average per gallon advertising expenditure of Ethyl petrol, $·0052; total estimated expenditure by all licensees in advertising Ethyl petrol, $10,192,000.

This investment of £420 regularly pays a dividend of 48·5% each year

* * *

This specific instance of the savings effected by efficient insulation with FOSALSIL is but one of the innumerable applications by which Fosalsil can save you money.

* * *

Here's the reason One of the largest manufacturing companies in the South of England who were using a waste heat boiler plant found that the heat loss from their gas in transit through their waste heat flue (6 ft. 6 in. external diameter and 80 ft. long, and lined with 9 in. of fire brick) during tests amounted to 1,453,920 B.Th.Us. per hour. Our engineers advised that the cost of insulating with Fosalsil would be negligible in comparison with the resultant savings of fuel, labour, and overhead charges.

Here's the result Insulated with a 4½-in. course of Fosalsil "B" Grade special flue brick, laid up with Fosalsil Insulating Mortar and installed behind a protective course of 4½-in. lining of fire brick —so that the effective area of the flue was not decreased—we reduced the radiation losses by 1,049,200 B.Th.Us. per hour, i.e., an actual saving of 72·4 of the radiation loss.

Here's the cost The total cost of stripping and relining the flue mentioned above, labour charges and cost of materials included, amounted to £420; regained in less than 18 months. The benefit to the company concerned amounted to £287 per annum, while during five years' working, and after deducting initial cost, the saving averages £169 per annum.

FOSALSIL INSULATION

repaid £1,050 over 5 years

The best way in which we can convince you that Fosalsil is an economical proposition is to quote you results obtained under working conditions similar to your own.—Write to our Technical Department—there is no obligation entailed.

MOLER PRODUCTS LIMITED

Telephone: METROPOLITAN 7751-2

49, MOORGATE, LONDON, E.C.2

Telegrams: FURMOL, AVE, LONDON.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, February 26, 1931.

No appreciable change has come over the general position of the chemical market during the past week. Although in one or two lines slight price recessions have to be recorded, marked steadiness continues in evidence in respect of the vast majority of chemicals. Forward buying interest at the moment is rather subdued, the bulk of the moderate business going through being for spot and early delivery parcels. There has been nothing in connection with the volume of inquiry in circulation this week to hold out much hope of immediate improvement in sales, although, as pointed out a week ago, traders are looking for a certain amount of seasonal expansion.

Heavy Chemicals

The demand for phosphate of soda just now is on a moderate scale, with not much material change in the price position, offers of the dibasic quality being in the neighbourhood of £10 per ton. A quietly steady business is being done in bichromate of soda, prices of which are held on the basis of 3½d. per lb., less discounts of from 1 to 2½ per cent. Sales of prussiate of soda this week have not been particularly active, but values are firm at from 4¾d. to 5¼d. per lb., according to quantity. Chlorate of soda is moving in moderate quantities and quotations are fully maintained at round £26 10s. per ton. Caustic soda is still a very firm section at from £12 15s. to £14 per ton, in contracts and according to grade, and fair aggregate deliveries of this material are reported. There is not much buying interest at the moment in the case of sulphide of sodium, which is on offer at about £8 per ton for the commercial kind and £9 10s. for the 60-65 per cent. concentrated solid quality. The demand for hyposulphite of soda is of moderate extent, with little or no alteration in the price position, the photographic quality being obtainable at round £15 per ton and the commercial at £9. Bicarbonate of soda is selling in fair quantities and values are firm at £10 10s. per ton, with alkali in much the same position at about £6 per ton. Saltcake is steady at up to £3 per ton, although no more than a quiet trade has been reported on this market during the past week.

Firmness is still in evidence in the case of yellow prussiate of potash, values of which range from 6¾d. to 7¼d. per lb., according to quantity. Chlorate of potash meets with a moderate inquiry and quotations are steady at round £27 10s. per ton. With regard to permanganate of potash, only moderate buying interest is being displayed, but at about 5½d. per lb. for the B.P. grade and 5¼d. for the commercial, quotations are much as before. There is a fair inquiry about for bichromate of potash, and values are fully maintained at 4¼d. per lb., less 1 to 2½ per cent., according to quantity. Both caustic potash and carbonate are in moderate request at £28 10s. to £29 and £25 per ton, respectively.

The undertone in respect of sulphate of copper seems to be a shade better than it has been for some time, owing to the renewed firmness in the metal, although values are still at about £21 per ton, f.o.b. Arsenic meets with a quiet demand and prices keep steady at round £19 per ton at the mines for white powdered, Cornish makes. Not much business is offering in the case of the acetates of lime, and at £13 10s. per ton for the grey material and £7 5s. for the brown values are not too strong. Sales of the lead products are of moderate dimensions, with nitrate on offer at from £29 to £29 10s. per ton, and white and brown acetate at £33 17s. 6d. to £35 15s. and £33 10s. to £34 15s., respectively.

Acids and Tar Products

The demand for both citric and tartaric acids has been on a quiet scale, and prices seem to be fractionally easier, with citric at from 1s. 1½d. to 1s. 2d. per lb., and tartaric at about 11¼d. Acetic acid maintains a firm front and a fair trade is reported; the glacial technical quality is quoted at £51 per ton upwards, and the 80 per cent. commercial at round £37. Oxalic acid is rather slow, but offers continue at about £1 12s. per cwt., ex store.

By-product prices are inclined to ease in one or two sections and the demand is quiet. Pitch is no better than 39s. per ton, f.o.b., with creosote oil ranging from 3d. to 4d. per gallon, according to grade. Carbolic acid is only in quiet call, with crystals at 5d. per lb., f.o.b., and 60's crude at about 1s. 2d. per gallon, naked.

Company News

Burbach Potash Co.—The board has declared a divdend for 1930 of 12 per cent.

International Petroleum Co.—A dividend of 25 cents per share is announced, payable on March 16.

Amalgamated Zinc (de Bavay's).—For the six months ended December 31 last a dividend at the rate of 8 per cent. per annum is announced, payable on April 10.

North Broken Hill.—In consequence of the continued low prices of metals, the directors announce that they are unable to declare a dividend for the quarter ending March 31.

Salt Union, Ltd.—A dividend of 9 per cent. has been declared on the ordinary shares, in respect of the year 1930. This compares with 12½ per cent. distribution in the six preceding years.

Torbay Paint Co.—A preliminary statement shows profits for 1930 of £12,125, against £10,805 in 1929. Taxation absorbs £2,347, and after paying a dividend of 12½ per cent., and placing £1,000 to reserve, there remains £2,685 to go forward.

Cerebos, Ltd.—The accounts for the year 1930 show that the profit was £226,218, an increase of 13,000 on the amount earned in 1929. The ordinary dividend is maintained at 30 per cent., tax free, and a further £50,000 is placed to reserve, leaving £118,536 to go forward.

Shawinigan Water and Power Co.—The gross earnings for the year 1930 amounted to $14,954,075, an increase of $1,478,211 compared with the previous year. The net earnings are stated to have been substantially higher, and the dividend was raised from $2.12½ to $2.50.

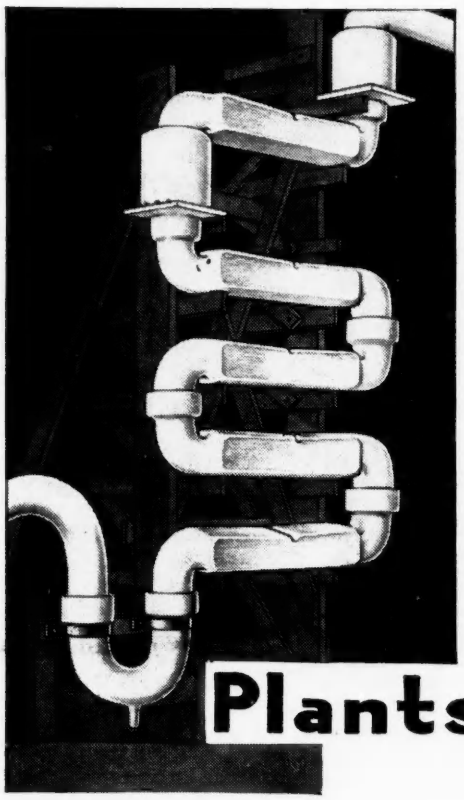
United Turkey Red Co.—Subject to audit, the profit for the year 1930, after providing for repairs, depreciation, etc., is stated to be £4,315, against £82,301 last year. No payment is recommended on the ordinary shares, against 6 per cent., less tax, last year, and, after payment of the preference dividend, £6,091 is carried forward.

Yorkshire Indigo, Scarlet and Colour Dyers.—After providing for depreciation of dyehouses, leasehold property, plant and machinery, and all other charges, a profit of £7,192 is shown, to which is added £1,503 brought forward. Out of this the interest on debenture stock has to be paid, leaving £4,181 to be carried forward.

John Oakey and Sons.—The report for the year ended December 31 last states that the net profits, including £2,796 brought forward, amounted to £38,318, compared with £50,156 a year ago, which included £5,137 brought in. A final dividend of 7½ per cent., less tax, is recommended on the ordinary shares, making 10 per cent. for the year, together with a dividend of 10 per cent. on the issued employees' shares, leaving a balance of £7,100 to be carried forward. For the previous year a dividend of 12½ per cent. was paid on the ordinary and employees' shares.

Goodlass Wall and Lead Industries.—The statutory report states that the receipts and payments up to February 11, 1931, were as follows:—Receipts, seven ordinary shares of 10s. each, £3 10s.; balances in bank and on hand, transferred from the amalgamating companies, £127,973; trading receipts and receipts on current account from subsidiary companies, £234,310; total £361,387. Payments: preliminary and formation expenses, £11,092; plant, office furniture, investments, etc., £2,091; payments on behalf of amalgamating companies to their shareholders under schemes of arrangement, £127,402; trading payments and payments on current account to subsidiary companies, £213,932; balances in bank and on hand, £6,870; total, £361,387. Preliminary expenses are estimated at £11,209.

Charles Clifford and Son, Ltd.—The report of the directors for the year ended December 31, 1930, states that adverse trade conditions prevailed throughout the year, and in consequence the amount of profit is reduced. The net profit for the year, after payment of directors' fees, is £11,743, which added to the balance brought forward from 1929, gives a total of £50,939. After payment of the interim dividends on preference and ordinary shares amounting to £3,900, there remains a disposable sum of £47,039. To the reserve for renovation of plant, machinery, etc., is placed £5,000, and after payment of the dividends there remains £35,139 to be carried forward.



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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

SAFETEX SAFETY GLASS, LTD., The Hyde, Hendon, manufacturers. (C.C., 28/2/31.) £22 1s. November 11.

London Gazette, &c.

Winding-Up Petition

ANCONA SULPHUR, LTD. (W.U.P., 28/2/31.) A petition for the winding up of the company was, on February 13, 1931, presented by George E. Gray, Ltd., to be heard at the Royal Courts of Justice on March 2.

Company Winding Up

SAFETEX SAFETY GLASS, LTD. (C.W.U., 28/2/31.) R. J. Hayward (with a Committee of Inspection), 103, Cannon Street, London, E.C.4. appointed liquidator, January 22.

Companies Winding Up Voluntarily

CHILEAN NITRATE OF SODA DISTRIBUTORS, LTD. (C.W.U.V., 28/2/31.) By special resolution, February 20. B. J. Davis, 2, Norfolk Street, Strand, London, W.C.2, appointed liquidator. Creditors' claims to liquidator by April 7.

RIVERSIDE DYEING AND FINISHING CO., LTD. (C.W.U.V., 28/2/31.) Creditors' claims to the liquidator, R. R. Smethurst, Chartered Accountant, 21, Spring Gardens, Manchester, by March 20.

BINDPHAST PRODUCTS, LTD. (C.W.U.V., 28/2/31.) By reason of its liabilities, February 14. H. Reynolds, A.C.A., of 80, Finsbury Pavement, London, E.C.2, appointed as liquidator.

New Companies Registered

THE BRITISH WATER, WOOD AND TEXTILES OZONE TREATMENT (SYNDICATE), LTD. Registered as a "private" company on February 21. Nominal capital, £4,500 in £1 shares. To adopt an agreement with Lt.-Col. G. E. Morgans, O.B.E., etc.; to acquire the sole and exclusive rights and interests for the British Empire and the U.S.A., of all patents, processes and methods concerning or applicable to the Otto Ozone process and method for the purification of water, its treatment and supply, the seasoning of the wood, and any other applications of Otto Ozone patents, processes and methods, except the bleaching of textiles; and to acquire options for the purchase of the sole rights for the British Empire and U.S.A., of all patents, processes or methods of the Crispi and Otto processes and methods for the bleaching of textiles, etc. Directors: G. E. Morgans and H. W. Lewin, Dippingwell, Farnham Common, Bucks.

IRISH SALT CO., LTD.—Registered in Dublin on February 18. Nominal capital, £1,000 in £1 shares. Rock salt proprietors, miners, brine owners, white salt manufacturers and drysalters, etc. A subscriber: F. W. Clark, 2, Warren Drive, Wallasey (director of Salt Union, Ltd.)

WILLIAM LAYCOCK AND SON (SKIPTON), LTD.—Registered February 17. Nominal capital, £1,000 in £1 shares. To acquire the business of sheep dip manufacturers and merchants, carried on as "William Laycock and Son," at Caroline Square, Skipton, and to carry on the business of manufacturers of and dealers in chemicals, sheep dip disinfectants, etc. Directors: W. Laycock, "Oakfield," Poynton, Ches.; W. M. Laycock, H. Hudson, W. A. Perkins.

NANT-Y-CYFF SILICA MINES, LTD.—Registered February 19. Nominal capital, £3,000 in £1 shares. To acquire the business of silica mining carried on by H. J. Wright at Nant-y-Cyff, Caerinion Fechan, Montgomery, lime burners, manufacturers of iron, steel, gas, coke, coal-tar and all the by-products of coal, silica, clay, patent fuel, fire and silica bricks, etc. Directors: H. J. Wright, Bryn-Astro, Llanbedr, Merionethshire; H. E. Dallow, W. Round, E. B. Tromans.

PEATSUPPLY CO., LTD., 380, City Road, London, E.C.1.—Registered February 18. Nominal capital, £100 in £1 shares. Manufacturers of and dealers in peat and all materials obtained therefrom by carbonisation, distillation or otherwise, and by-products thereof, firelighters, fertilisers, litter, packing, insulating and building materials, etc. Directors: J. Evans, D. E. Davies, R. H. F. Standon, L. Rudeman.

Tariff Changes

Further Chinese Import Duties

LAST week we published a list of import duties on chemicals in the new tariff of the Republic of China, in force as from January 1. The following is an additional list of the duties on colouring matters (specific rates are expressed in gold units of a fixed value of 10·7265 pence sterling. Picul = 133⅓ lb. avoirdupois. "N.o.p.f." stands for "not otherwise provided for"):

	Gold Units.
Cobalt, oxide of	12½ per cent. ad val.
Cochineal	12½ per cent. ad val.
Cunao or false gambier, picul	0·86
Cutch or gambier, picul	2·10
Gamboge, picul	17·00
Green, emerald, Schweinfurt or imitation, picul	8·60
Hartall (orpiment), picul	3·10
Indigo, artificial, containing not more than 20 per cent. indigotin (higher strengths in proportion), picul	12·00
Indigo, dried, natural, picul	27·00
Indigo, liquid, natural, picul	2·50
Inks of all kinds	12½ per cent. ad val.
Laka-wood, picul	0·93
Lead, red, white, and yellow, picul	3·40
Logwood extract, picul	3·00
Nutgalls, picul	4·40
Ochre	12½ per cent. ad val.
Safflower	12½ per cent. ad val.
Sapanwood, picul	1·10
Smalt, picul	8·80
Turmeric, picul	1·50
Ultramarine, picul	5·60
Vermilion, picul	26·00
Vermilion, artificial	12½ per cent. ad val.
White zinc	12½ per cent. ad val.
Dyes, pigments, colours, tans and tanning materials and paint materials, n.o.p.f.	12½ per cent. ad val.
Paints, varnishes, and polishes, n.o.p.f.	15 per cent. ad val.

Germany

As from January 1 a reduced "Conventional" duty of 1 Reichsmark per 100 kilogs. has been introduced in the German Customs Tariff for ferro-silicon-aluminium alloys containing 55 per cent. or less of aluminium.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

AUSTRIA.—An agent in Vienna desires to obtain the representation of British manufacturers of chemical products and pharmaceutical chemicals. (Ref. No. 148.)

ARGENTINA.—A Buenos Aires firm, whose agent is at present in Europe, wish to represent British manufacturers of paints and varnishes and pharmaceutical products. (Ref. No. 157.)

Hungarian Market for Nitrocellulose Lacquers

THE United Kingdom, Germany and the United States are the principal outside suppliers of nitrocellulose lacquers to Hungary, where the total annual consumption is estimated by the trade to be about 300,000 pounds. There are five domestic factories. Although the use of lacquers is not developed to any great extent, it is expected that when their advantages are better known, greater use will be made of them, particularly by the State and private railways, the furniture and motor industries.